



Università
degli Studi
di Torino



Food



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UniTo EIT Food Projects 2018-2020



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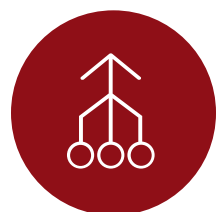
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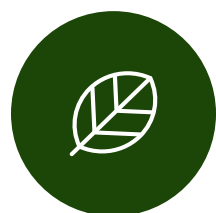
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Introduction

The European Institute of Innovation and Technology (EIT) brings together leading higher education institutions, research labs and companies to form dynamic cross-border partnerships - Knowledge and Innovation Communities (KICs) - that develop innovative products and services, start new companies and train a new generation of entrepreneurs.

EIT Food is a European Knowledge and Innovation Community (KIC), part of the EIT, which was set up to transform our food ecosystem. It is a consortium of over 50 partners from leading businesses, universities, research centres and institutes across 13 countries in Europe, with the ambition to create a future proof and effective food sector through a connected food system. By connecting consumers with businesses, start-ups, researchers and students from around Europe, EIT Food supports innovative and economically sustainable initiatives, which improve our health, our access to quality food, and our environment.

EIT Food's vision is to put Europe at the centre of a global revolution in food innovation and production, and its value in society. EIT Food will engage consumers in the change process, improve nutrition and make the food system more resource-efficient, secure, transparent and trusted.

GOALS AND IMPACT

EIT Food has six strategic objectives:

- 1. Gain consumer trust.** EIT Food supports European citizens in the transition towards a smart food system that is inclusive and reassuring.
- 2. Create healthier food choices.** EIT Food enables individuals to make informed and affordable personal nutrition choices.
- 3. Build a connected food system around the consumer.** EIT Food develops a digital food supply network with consumers and industry as equal partners
- 4. Enhance sustainability.** EIT Food develops solutions to transform the traditional 'produce-use-dispose' model into a circular bio-economy.
- 5. Educate to engage, innovate and advance.** EIT Food provides 'food system' skills for more than 10,000 students, entrepreneurs and professionals through advanced training programmes
- 6. Promote food entrepreneurship and innovation.** EIT Food fosters innovation at all stages of business creation.

ACTIVITIES FUNDED

Activities funded by EIT Food each year are included in several areas, as follows:

1. Innovation

By bringing all players together EIT Food wants to build a shared vision for the future of food and a shared agenda to transform it and make it better.

EIT Food role is to guide and accelerate the innovation process that will transform the food system. EIT Food partners are committed to overcoming low consumer trust, creating consumer-valued food for healthier nutrition, building a consumer-centric connected food system and enhancing sustainability through promoting a circular Bioeconomy.

EIT Food is building an inclusive and innovative community where the consumer is actively involved, by empowering consumers to take an active part in the transformation of the food system, as well as building and shaping the innovators of tomorrow. The general approach is to put the needs and concerns of consumers at the heart of the food value chain, co-creating ideas to drive a more resource-efficient, secure, trusted and transparent food system.

2. Education

From summer schools and online courses to dedicated Master and PhD programmes, EIT Food has developed a range of activities for anyone who wants to learn about food, working with leading higher education institutions and food companies to develop and offer exciting programmes to help individuals with their career in the food system.

EIT Food programmes are aimed at current and future students as well as professionals either wanting to work or already working in the sector. They are designed together with industry professionals and entrepreneurs and are tailored to fit around busy schedules.

3. Business creation

EIT Food supports innovative impactful agrifood entrepreneurs and startups to deliver new food innovations and businesses across Europe, offering:

- An unparalleled network: access to 50+ of Europe's leading agrifood businesses, universities and research organisations
- European reach: a presence in every country in Europe (and beyond!), helping business reach new markets and develop internationally
- A powerful brand: as the designated EU body to transform Europe's food system, companies will benefit from EIT Food powerful brand making your business more attractive to investors and customers.

4. Communication

The basic concept is that we are all responsible for, and connected to, the food that we eat, so we all need to work together to improve it. Therefore activities in the Public Engagement Area are designed to engage with people so that they can become agents of change in the food system.

Our public engagement activities can be grouped into the following areas:

- Dialogue and engagement via events & (digital) platforms
- Offering guidance by providing targeted information
- School programmes.

5. Regional Innovation Scheme (RIS)

The EIT Food RIS strategy focuses on enhancing development within the agrifood sector by implementing activities related to innovation, education, business creation and communication in RIS countries and regions. This outreach scheme is open to students, researchers, innovators, entrepreneurs and consumers and it's aimed at upgrading their skills and taking full advantage of their creativity.

6. Cross-KIC

Activities that involve simultaneously several KICs (such as EIT health, Climate KIC or EIT Digital).

1.

.....
INNOVATION



C-SNIPER: Campylobacter-Specific Nullification via Innovative Phage-mediated Enteropathogen Reduction



1. INNOVATION

Years - 2019/2020

Total cost of the project - 1.162.727 €

EIT Funding to UniTo - 183.563 €

Segment - **Food for healthier nutrition (SO2)**

Activity leader - **Lasagabaster, A (Amaia) | AZTI | Fundacion Azti - Azti Fundazioa**

UniTo's Role - **Partner**

Contact Person - **Luca Cocolin**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

Campylobacter is one of the greatest concerns in the poultry sector of the European Union. Consumption of poultry products, especially chicken meat, is considered the most common route for **human campylobacteriosis**, the most frequently reported **food-borne illness** in Europe and worldwide. Colonization of broiler chickens at farm level leads to transmission of Campylobacter along the production chain, resulting in **contamination of poultry meat** at retail level.

Standard control measures at farm level rely upon the use of antibiotics, which promote the selection and spread of multidrug resistant strains, an additional threat to public health. However, no effective alternative is currently available and pressure to reduce Campylobacter prevalence in poultry without use of medically-relevant antibiotics is rising.

The C-SNIPER project aims to **reduce** the prevalence of **Campylobacter in poultry** through an innovative, efficient and **non-antibiotic** based mitigation **strategy** that can be integrated into existing hygiene protocols. Specifically, this activity will develop a bacteriophage-based solution to be used as natural antimicrobial in the farm (pre-harvest), slaughter and/or processing facilities (post-harvest). This development will improve the safety of poultry meat, reducing thereby the incidence of poultry-borne food poisoning, without impacting on animal welfare.

ACTIVITY PURPOSE

The EU is the third world's poultry producer with a yearly production of 15.2 million tonnes of **poultry meat**, the **most eaten meat in the EU** (24 kg/capita). However, the consumption of broiler meat is considered the responsible of the 20-30% of human campylobacteriosis, the most frequent food-borne illness in the EU with an associated cost of 500-5,000 M€/year. Moreover, antibiotic resistance, an additional threat to public health, becomes increasingly prevalent in Campylobacter. In addition, the EU has recently developed the Commission Regulation (EU) 2017/1495 amending Regulation (EC) No 2073/2005, which allows broiler carcasses complied with a Campylobacter limit of 1,000 CFU/g. Therefore, it is critical to develop novel non-antibiotic based strategies to reduce Campylobacter risk within the EU poultry sector.

Different mitigation strategies (biosecurity measures, reduction of slaughter age, vaccination or the use of pre-/pro-biotics or other antimicrobials as feed additives) have been proposed to control Campylobacter in primary production but their inability to solve the entire problem places them as complementary hurdles in a synergistic approach. Carcasses decontamination processes have been also proposed but no chemical treatments are currently authorized in the EU, and physical treatments like freezing and heat treatment have a negative effect on the product appearance. Thus, a more proactive solution is still required.

The main goal of this activity is to develop a novel **phage-based product** to be used as pre- and/or post-harvest biocontrol solution to reduce Campylobacter prevalence in poultry. The use of Campylobacter-infecting phages as a **food safety strategy** is desirable as they are natural specific enemies of this pathogen (harmless to plants, animals and humans), do not affect the normal microbiota of the host or alter food properties. The C-SNIPER prototype will be defined in 2019 and its efficacy at different points from farm to fork will be optimized and validated in 2020.

This development will address the risk of Campylobacter in poultry, one of the biggest issues facing this sector, with the consequent positive impact on the EU poultry sector, poultry meat safety and public health economy and social welfare. According to the EFSA, a public health risk reduction of 50-90% could be achieved at EU level by 1-2 log CFU/g reduction in broilers gut or carcasses.

Although there are commercial phage products against *L. monocytogenes*, *E.coli* or *Salmonella*, **no Campylobacter specific phage product** is commercially **available** yet. C-SNIPER project will provide new evidences to fill this gap in the market, allow commercial operators to select appropriate conditions to use campylophages, and support future EU regulation on phages application. Different commercial channels for the main geographical areas (Poland, Spain, Germany and Italy, initially) will be considered to accelerate market penetration and commercial exploitation.

EXPECTED OUTCOMES AND IMPACT

The consumption of broiler meat is considered the responsible of the 20-30% of human campylobacteriosis, the most frequent foodborne illness in the EU since 2005 with a related cost of 2,500 M€/year. Standard control measures at farm level rely upon the use of antibiotics promoting the spread of antibiotic resistance, an additional threat to public health. No effective alternative is currently available.

The main goal of this activity is to develop an effective phage-based product as a **natural solution to reduce Campylobacter prevalence in poultry**. The main outcome of 2020 will be the validation of the basic standards for the practical and commercial application of the prototype defined in 2019.

The main expected impacts are:

- Improve **poultry meat safety** (by 1-2 log CFU/g reduction in carcasses).
- **Reduce the risk of campylobacteriosis** (50-90% risk reduction by 1-2 log CFU/g reduction in carcasses).
- Protect EU consumers from poultry-borne campylobacteriosis (50-90% risk reduction by 1-2 log CFU/g reduction in carcasses).
- Reduce Campylobacter prevalence in flocks (50-90% risk reduction by 1-2 log CFU/g reduction in broilers gut).
- **Reduce antibiotic usage** in poultry and the development of multidrug-resistance.
- Produce healthy, safe and high-quality poultry products.
- Improve the consumers' confidence in the poultry industry.
- **Promote the EU Poultry sector growth** and increase its scope in domestic/export markets.
- Provide new evidences to put in the market **new bacteriophage-based commercial products**.
- Fill the market need for an alternative product to **reduce the antibiotics usage in poultry**, supporting the PTC for a new business chance, and AZTI, as the owner of the phages, with IP exploitation rights.
- Allow commercial operators to select appropriate conditions to use new product.
- Strengthen the competitiveness of all partners addressing this long-lasting issue at national and EU level.
- Support future EU regulation on bacteriophages application.

PARTNERS

007 - AZTI

032 - Institute of Animal Reproduction and Food Research

047 - University of Turin

121 - ORA Agricola

122 - PTC

VITAL: Validation of Innovative Tools
to Assess and to predict
microbioLogical safety in the food chain



1. INNOVATION

Year - 2020

Total cost of the project - 466.469 €

EIT Funding to UniTo - 147.350 €

Segment - **Connected and Transparent Systems (S03)**

Activity leader - **Cocolin, LC (Luca) | University of Turin (UniTo) |**

UniTo's Role - **Coordinator**

Contact Person - **Luca Cocolin**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

Conventional microbiological testing takes time to get results. This impacts the supply chain, causing delays to get to market whilst results come back on finished but not shipped goods.

Rapid methods solve this problem, but they need to be proven to work as well as the standard microbiological methods that they replace. Proving these rapid methods work just as well, requires them to be tested in multiple food matrices. This is time-consuming, expensive and slows down adoption.

AI can solve this problem. An **algorithm** comparing historical standard microbiological tests against the rapid method tests will be created and this will allow food companies to radically **reduce** the number of **verifying tests** they will need to do, to **ensure the rapid method works** in their food matrix of interest.

Salmonella spp. will be targeted because it poses a severe threat to multiple food products.

In the following phase, we will compare the recommended test plan from the AI to a real-life ISO verification for 2 new products, done in the lab first and then in a food factory.

ACTIVITY PURPOSE

Food safety is a must for food producing companies. The absence of hazards in foods represents a pre-requisite for their entrance on the market and, in this context, food companies invest a lot of effort and money to ensure the absence of foodborne pathogens thereby protecting public health. The gold standards for the detection and identification of foodborne pathogens still rely on their cultivation on synthetic media, even if it has been well described that stresses encountered in the food chain (e.g. low pH, low aw, low T and nutrient starvation) can provoke pathogenic bacteria to enter into a viable not culturable state. When in this condition, they will not be able to grow in laboratory media and their detection will fail. Moreover, **traditional methods** need 5 to 7 days from the sampling to the response and this time is often **too long** to cope with the speed modern food companies require especially when short shelf life products have to be commercialized.

With the advancements in molecular biology experienced in the last 30 years, new methods have become available and allowed for significant shortening of the time requested to obtain the results of a microbiological analysis. The invention of PCR represents the major breakthrough in pathogen detection and identification. Moreover, following the developments in microfluidics and miniaturization, nowadays devices are available the size of a microscope slide where, in an automated way, the detection of foodborne pathogens in a given food can be done. However, these sensors have to be validated in an industrial setting to prove their efficiency in order to be used in routine analysis and can be time and effort consuming & very expensive.

This project aims at providing solutions to **assure food safety** based on the smart exploitation of two innovative tools: **artificial intelligence (AI)** and **lab-on-chip sensors**, respectively. AI will be used to analyze available data on validation of rapid methods for the **detection of foodborne pathogens** and provide a **prediction tool** that will allow a more effective validation scheme of such methods in an industrial setting. Source data will be collected from public ISO16140 validation reports (AFNOR, Microval).

The outcome of this first phase will be used to implement a validation of a lab-on-chip sensor for Salmonella spp. and its verification at industrial setting. In parallel ISO methods will be used to check the performance of the rapid method and assess its full exploitation in food industries.

EXPECTED OUTCOMES AND IMPACT

This proposal aims at closing the gap between new approaches, data analysis and technology driven, exploitation and needs for rapid responses on microbiological testing for foodborne pathogens. Specifically: we are aiming at taking advantage of artificial intelligence (AI) to analyze all available data on rapid methods validation to generate a tool (a recommender system) which will enable the definition of the criteria to be used in order to validate a new rapid method, which in this proposal is represented by a lab-on-chip device for the detection of Salmonella.

The expected outcome of this project will be a **validated rapid method**, based on the **lab-on-chip device**, which will be developed by SwissDecode, for the detection of Salmonella in two ingredients, identified by PepsiCo, by the exploitation of AI, in a short time (less than 6 hours). The validation procedure proposed by the AI will be fully validated in laboratory settings following the ISO guidelines, and later verified at industrial settings. The project presented here will consider two ingredients, however we expect to develop a framework, in which validation in other ingredient/matrices will be fully possible by using the **algorithm developed by the AI**.

The results of this project have the potential to impact on how validation of rapid methods can be performed and verified at industrial level by taking advantage of innovative approaches such as AI. It is expected that due to the lower demand requested for the validation of new rapid methods, those possibilities will be more often employed at industrial level resulting in better assessment of foodborne pathogens in the food chain and safer foods for the consumers.

PARTNERS

030 - PepsiCo

047 - University of Turin

503 - AI Talentum

558 - SwissDeCode

CLEANFRUIT - Towards zero residue fruit production: development of sustainable strategies for pest and disease control

Year - 2020

Total cost of the project - 764.823 €

EIT Funding to UniTo - 175.635 €

PUBLIC ACTIVITY DESCRIPTION

Fruit crop protection is heavily dependent on chemical pesticides. Fruit processors need fruit free from pesticides for baby food and other specialized products. Fruit quality and safety could benefit from standardized production under schemes free from chemical pesticides. The aim of CleanFruit is to develop and promote standardized practical strategies for fruit crop protection, based on new and existing biological pesticides (i.e. beneficials and microbials), commercial pollinators, and innovative pest detection tools. A holistic approach permits the evaluation of the impact of **innovative and sustainable crop protection strategies** on pest control, pollination, yield, costs, post-harvest quality and health of fruit, storage and processing. Strawberry and apple cultivations are the selected model crops.

Sustainable and innovative prevention, **monitoring** (LAMP detection) and **control tools** are adopted in commercial fields of strawberry and apple, located in Italy, the Netherlands, Spain and UK. The farmer acceptance of the new technologies and the consumer behaviour towards fruit and fruit-derived products free from chemical pesticides are analysed. The dissemination of the results involves farmers, consumers and other stakeholders of the fruit value-chain. The project outcome is a **standardized pest control package** that supports **zero-residue crop production**, which has been tested for delivery of clean crops, grower acceptance and wider ecological, economic and social benefits.

ACTIVITY PURPOSE

Context

Pest control in fruit production is heavily dependent on **chemical pesticides**, associated with **negative impact** on food safety and the environment. Fruit processors buy extensive amounts of zero residue fruit for baby food and other processes. Interest in sustainable means for pest control with reduced impact on humans, beneficial organisms and ecosystems is growing. European fruit could benefit from premium price when produced under pesticide free schemes with Europe producing over 1.6 million t of strawberry and 14 million t of apple every year.

Our aim

CleanFruit aims to develop and promote a **standardized zero-residues (ZeR) crop protection strategy** for strawberry and apple, employing new and existing biological pesticides, commercial pollinators, and innovative pest detection tools. A holistic approach is taken incorporating crop protection strategies alternative to chemicals. Effects on pest control, pollination, yield, cost, post-harvest quality and health of the fruit, storage and processing, farmer and consumer acceptance are considered. A ZeR strategy also favours natural pollination, and insect and microbial biodiversity. The selected crops are **strawberry** and **apple**.

The team

Koppert develops sustainable strategies for crop protection to be used in strawberry and apple production. **Grupo AN** adopts the technologies in its own orchards. **Downstream, Döhler** and **Givaudan** process fruit and produce strawberry-and apple-based juices, flavours and aromas, free from pesticide residues. The two academic partners, **University of Torino (UniTo)** and **University of Reading (UoR)**, provide scientific support and expertise on plant pathology, entomology, crop protection, pollination and consumer and farmer acceptance.

1. INNOVATION

Segment - **Sustainability and resource stewardship (S04)**

Activity leader - **Spadaro, SDC (Davide Carmelo) | University of Turin (UniTo) |**

UniTo's Role - **Coordinator**

Contact Person - **Davide Spadaro**

Department involved - **Agricultural, Forest and Food Sciences**

Our approach

A standardized package for sustainable and innovative crop protection based on **prevention, monitoring** and **control** is agreed with farmers and adopted in pilot fields of strawberry and apple. The experimentation is carried out in Italy, the Netherlands and UK for strawberry, and in Italy, Spain and UK for apple. During the first year, protocols and strategies are set up on two pilot sites per crop per country. The **farmer acceptance** of the new technologies is assessed. During the second year, optimization of the protocols and strategies takes place. The **consumer acceptance** of fruit and fruit-derived products free from chemical pesticides are analysed, and dissemination of results involves farmers, consumers and other stakeholders along the fruit value chain.

Project outcomes

A standardized pest control package that supports **zero-residue crop production**. A business plan to drive the creation of a consultancy company supporting the application of the ZeR strategy.

EXPECTED OUTCOMES AND IMPACT

CleanFruit aims to develop and promote a standardized zero-residues (**ZeR**) **crop protection strategy for strawberry and apple**, employing new and existing biological pesticides, commercial pollinators, agronomic practice and innovative pest detection tools.

According to the European Food Safety Authority (EFSA), 77.4% of strawberries and 63.5% of apples tested in 2016 contained residues of at least one pesticide. Multiple residues were found in 63.9% of strawberries and 41.8% of apples. Residues were even found on 16.9% of organic produce. Certified organic produce is experiencing increased demand, but remains a luxury, excluding large parts of the population due to high product prices. Part of the reason for high price levels for organic produce is the linkage of different goals in one certification: **responsible use of energy** and natural resources, maintenance of **biodiversity, preservation** of regional **ecological balances**, enhancement of soil fertility, maintenance of water quality and animal welfare.

CleanFruit is expected to have an **impact on the fruit market** for baby food and other processes requiring fruit free from pesticides, by establishing standardized protocols for a market segment, which targets food processors who are interested in providing consumers with food free from pesticide residues. The project aims to develop and field-validate **crop protection protocols** that fulfil this demand. The project incorporates different stakeholders within the food system: biocontrol industries, farmer cooperatives, food processors, as well as academic partners with expertise in horticulture, crop protection, pollination and consumer acceptance.

Expected outcomes include the standardization of ZeR strategies with farmers and other stakeholders in apples and strawberries, two crops of interest to the processing industry, as well as generation of data on the impact of such protocols on pollinators, horticultural practice, yield quality and quantity, post-harvest durability, economic sustainability for farmers, and farmer and consumer acceptance. Anticipated impacts of the project include a reduction in synthetic pesticide use in conventional production, standardization of fruit supply of **pesticide-free ingredients for the food industry**, and reduction of prices of pesticide-free food for consumers.

PARTNERS

- 012 - Döhler
- 020 - Grupo AN
- 023 - Koppert
- 046 - University of Reading
- 047 - University of Turin
- 062 - Givaudan Switzerland

Optimization of bakery processes by a computational tool together with consumer feedback to minimize ecological footprint and food waste

Year - 2020
Total cost of the project - 919.446 €
EIT Funding to UniTo - 50.639 €

PUBLIC ACTIVITY DESCRIPTION

A prospective production-planning **tool for bakeries** will be developed in this trans-and interdisciplinary project. Present machinery in bakeries is used to **optimize** the **production process**. The reduction of make span and idle time of machines, but also combinations thereof will lead to a higher economic and ecologic efficiency, thus, lower production costs for bakeries and lower climate change impact for society.

The tool is developed using a **flow-shop model**, optimized by evolutionary **algorithms**, **digital twins** and **artificial intelligence** procedures. Adaptation to consumers' preferences will minimize food waste, hence, ecological footprint in bakeries, and lead to further optimization of the baking process, product range and amount. Consumers' demands and expectations related to e.g. weather or holidays, and their acceptance of changes in product availability will play a big role in the analysis.

In the end, a **computational application** will help SME bakeries as users to adapt their production planning and processes to best practice. Subsequently, its potential in practical application will be examined and its impact broadened to the rest of Europe and beyond. Dissemination through technology transfer to users by involving professionals, students and learning videos will be performed. The product will be commercialized in the end to make it possible for bakeries to adapt to the truly needed amount and product range with optimized baking schedules to reduce energy consumption.

ACTIVITY PURPOSE

The bakery products subsector has the largest number of companies, value added, employees and number of companies in Europe (Food and Drinks, 2011). Over-consumption of energy in bakeries due to inefficient scheduling and production planning together with high shares of unsold bread waste (5-10% in Europe) is a big issue. Not only avoidable CO2 emissions affecting climate change and society, but also excessive costs for SME bakeries are severe consequences. Recently, the EU has identified the bakery sector as one of the target sectors to apply best environmental practices. The aim of the envisaged project is in line with the goals of the EU (Regulation (EC) No 1221/2009, 2017/1508 of 28 August 2017 EU): **minimizing food waste** and **reducing energy consumption**.

Currently, employees plan baking processes based on subjective perceptions without considering externally influenced variability. The application of numerical methods will **increase the production efficiency** of bakeries by an optimal production schedule. Former research confirmed this hypothesis with possible make span reduction of 7-9% and idle times reduction of 23-27% resulting in a lower carbon footprint and production costs. Profound data regarding the preferences of consumers are still missing.

Consumer and production process data will be collected across Europe. A flexible multivariate data model will be developed, leading to a **software tool running on a workstation**, which can be handled on either mobile devices or desktop PCs. A digital twin will **simulate the production flow of the bakery**.

1. INNOVATION

Segment - **Sustainability and resource stewardship (SO4)**
Activity leader - **Braun, SB (Susanne) University Hohenheim I**
UniTo's Role - **Partner**
Contact Person - **Remigio Berruto**
Department involved - **Agricultural, Forest and Food Sciences**

In the end, an **application for SME bakeries as users**, but also big companies will be established. Educational EIT Food projects are planned beyond the project period to reach more SMEs in Europe in collaboration with student groups and bakery associations, also for RIS countries. The product will be **patented and commercialized** shortly after project end. Bakeries across Europe will profit from resource economization, the reduction of costs, the minimization of wasted energy and food, and subsequently enhanced consumer trust. UHOH together with Siemens will take the lead.

The envisaged project aims to:

- **Reduce food waste** through adaption to consumers' behavior and perception by taking into account bank and school holidays, weather forecast, but also consumers' perceptions close to shop closing time using recorded sales data, and information from consumer involvement, e.g. in focus group discussions, or questionnaires
- **Reduce energy consumption** during production by optimizing e.g. idle times and make spans, alternative production of "can" products, but also due to production in line with demand
- **Enhance baking productivity** by identifying the optimal sequence of baking production according to their characteristic parameters (temperature, baking time, etc.)

EXPECTED OUTCOMES AND IMPACT

In the EU, more than 154.000 bakeries, with 99.7% SMEs, waste resources due to energy over-consumption. One reason is inefficient production planning of the baking schedule only due to the employees' experience. Our envisaged computational production-planning tool will make not only the bakeries profit from lower energy costs and time consumption which feeds into SO6. The society will benefit from reduced CO2 emissions due to higher efficiency contributing to SO4.

By applying the model for SME bakeries as users, a reduction in energy consumption by make span minimization (up to 8.6%), and idle time minimization (23%) is possible (Hecker et al., 2014, "activity website"). Energy costs in bakeries account for 3-7% of their revenue; the smaller the bakery, the higher their share (pers. comm.). Identification of "must" and "can" products will further **increase the process efficiency**, i.e. "can" products production during idle times, and reduce the ecological footprint even more. Prospective production planning will **diminish food waste**, also related to energy use. For this purpose, sales data correlated to holidays or weather (e.g. BBQ in summer) and consumers' demands (KPI KICI03) will be collected in the participating bakeries (3 bakeries in different sizes in 6 countries). The approach will be tested in all involved bakeries, and feedback workshops will be conducted in 2021.

Siemens will set up a pilot digital twin to increase and accelerate optimization. Siemens will patent the product (KPI KICI01) and launch it to the market (KPI EITN03). From 2022 onward, EIT Food novel education programmes (KPI KICE04), e.g. GrowWorkshops, where as well external participants in EIT RIS countries are addressed (KPIs EITN08, KICR04), will be conducted. Excellent networks in the bakery sector, including bakery associations and guilds, will ease the tool commercialization aiming at reduced GHG emission, energy consumption and food waste in SME bakeries.

PARTNERS

- 011 - CSIC
- 032 - Institute of Animal Reproduction and Food Research
- 038 - Siemens
- 045 - University Hohenheim
- 047 - University of Turin
- 099 - University of Aarhus
- 110 - LU Lund

The development of organic supply chains that drive fair, transparent and healthy options for the consumer

Year - 2019/2020

Total cost of the project - 2.952.300 €

EIT Funding to UniTo - 107.290 €

PUBLIC ACTIVITY DESCRIPTION

The organic food supply system in Europe must rank among one of the most important in terms of trust. Our citizens make purchasing choices around organic food based on a wide range of issues which include sustainability, ethics, food safety and nutrition. On a global basis the amount of fraud occurring in the organic supply system is growing rapidly and issues are appearing on a weekly basis. The potential to totally undermine citizen trust in organic food is a real and present danger. We have an enormous opportunity through EIT Food to implement a number of cutting edge technologies that will make the **organic food system** much **more resilient to fraud**, much more transparent and drive the safety and micronutritional aspects of the system.

ACTIVITY PURPOSE

To develop a comprehensive transparent organic food system to increase consumer trust for the beef and vegetable supply chains, rapid methods of detection for identified biomarkers will be integrated into an open **digital twin management system** to meet the needs and expectations of stakeholders and consumers. Innovative communication strategies for all stakeholders, especially the consumer will be considered and assessed. Rapid methods detecting unique biomarkers to **identify organic status** combined with the digitised supply chain will not only guarantee the integrity and transparency of the supply chain but will increase its perceived value. The risk of failed controls, fraud and distrust by the consumer will decrease. Through clear communication, the trust of the consumer will increase.

The work packages include:

- WP 1** - Relationships between product characteristics and analytical features will be examined to propose biomarkers and their **rapid detection in organic products**. Tasks include development and validation of rapid test methods for biomarkers from beef and vegetable organic supply chains using portable handheld technologies, development of chemometric models, placing the chemometric models in the cloud, developing an **app for data analysis** and user-friendly reporting and holding a workshop to demonstrate the methods.
- WP 2** - **Understanding consumer and stakeholder needs**. Audits of supply chains and workshops for requirements and cases from relevant stakeholders will be finalised. Inputs/recommendations from the workshops and information concerning consumer expectations will support other WPs. Tools that will be accepted by stakeholders and consumers will be developed.
- WP 3** - **Digitisation of the organic supply chain**. The developed product digital twin will be extended for consumer interaction, supply chain integrity and apps for monitoring and analysis. The platform for managing digital twins of products and data exchange will be considered. Standardisation specifications and recommendations will be identified.

1. INNOVATION

Segment - **Grand Challenges**

Activity leader - **Elliott, CT (Chris) | Queen's University of Belfast |**

UniTo's Role - **Partner**

Contact Person - **Angela Fedi**

Department involved - **Psychology**

- WP 4&5** - **Application of biomarkers** and digitisation on the selected organic supply chains. Known trusted organic farms to act as control farms will be recruited to develop and trial the new approaches. Ways to further strengthen the supply chains and additional work on analytical techniques to support organic/non-organic status will be explored. These methodologies will be assessed in live animals and finished meat products.
- WP 6** - **Communication to consumers**. Development and concept testing of an organic food game will be undertaken. Simulation models of the organic food chain will result in a knowledge database for a game app for consumers. Market research will identify the wants and needs of stakeholders and consumers. An app design document will be produced.

WP 7 - **Commercialisation model**. The best models for commercialisation of the digital twin concept, biomarkers and handheld systems will be identified.

EXPECTED OUTCOMES AND IMPACT

- The organic food market is of growing economic importance and consumers perceive organically produced food items as superior to conventional ones and are also willing to pay a certain premium on such foods. This growing number of consumers is making food purchase decisions based on the attributes of such organic production systems and need to trust the respective labels that assure the desired properties. Together with this rising economic significance, the production, sales and marketing of organic food has a severe and **growing issue to address fraud**.
- Organic fraud can be extremely difficult to detect using the established laboratory-based procedures. Within our project, we will incorporate **biomarkers** that will give clear and indisputable evidence that the **food was produced in conformity with the EU organic products label's standards**. In a highly transparent way, all actors along the production chain including primary producers, food processors, logistics, retail and the end-consumer can be informed about the attributes of the food at all stages, thus being assured that it is organically produced according to the claim and that no manipulations have happened.
- The organic supply chain will become digitally connected and transparent to all actors thanks to a **unique digitised twin supply chain concept**. A consumer-centric supply chain shall satisfy needs and preferences almost seamlessly and on demand, thus ensuring complete supply chain integrity. This level of information availability is supported by cutting edge science and will have a huge impact of the decision of European citizens by assuring that their purchase is authentic and well worth the eventual premium. Within our project, a wide reaching stakeholder inclusion in the form of an **Organic Producer's Forum** and an **Advisory Board** composed of key stakeholders will be implemented to ensure a comprehensive coverage of issues, viewpoints, challenges and solutions for the benefit of the European consumer.

PARTNERS

- 007 - AZTI
- 010 - Colruyt
- 017 - Fraunhofer
- 023 - Koppert
- 034 - Queen's University Belfast
- 038 - Siemens
- 043 - University of Cambridge
- 045 - University Hohenheim
- 047 - University of Turin
- 051 - ABP Food Group
- 080 - Bio-Planet
- 081 - Colruyt Group Services

FROM WASTE TO FARM: insect larvae as tool for welfare improvement in poultry



1. INNOVATION

Year - 2019

Total cost of the project - 269.375 €

EIT Funding to UniTo - 111.000 €

Segment - **Zero Waste Agenda**

Activity leader - **Schiavone, AS (Achille) |
University of Turin (UniTo) |**

UniTo's Role - **Coordinator**

Contact Person - **Achille Schiavone**

Department involved - **Veterinary Sciences**

PUBLIC ACTIVITY DESCRIPTION

The aim of this project is to **test the effects of innovative ingredients** (insect larvae) **in poultry feeding** to allow sustainable production, to improve animal welfare and to potentially meet the consumer demand for healthier, more natural and better-tasting products. Insects larvae will be reared on food side streams, allowing the valorization of secondary raw materials produced in excess from food industries, and then used as environmental enrichments in laying hens and broilers. Point-source objects (pecking objects and litter/bedding containing insect larvae) will be used to allow species-typical behaviors and maintain animal health, thus resulting in an improvement of birds welfare and quality of food products. Cost-benefit analysis will be finally carried out in order to define the economic effect of such innovative productions and environmental enrichments in the industrial settings.

ACTIVITY PURPOSE

The discovery of alternative and **sustainable protein sources for animal feeding** represents a crucial challenge. Furthermore, poultry farming has always dealt with remarkable welfare issues (i.e., feather-pecking, lameness, contact dermatitis, heat stress) related to the intensive rearing. In this proposal, we intend to face these problems by proposing the use of innovative environmental enrichments based on **insect larvae**, which will improve the environmental sustainability and birds welfare.

EXPECTED OUTCOMES AND IMPACT

We foresee that the use of insect larvae as innovative feed ingredients will support environmental sustainability by creating a circular economy in which secondary raw materials will be used as growing substrates. **Insect larvae** so obtained will be used as **environmental enrichments** to positively impact the welfare of barn-laid laying hens and broiler chickens, along with the maintenance or improvement of birds health and the potential reduction of antibiotics use as a consequence of the prebiotic/probiotic properties of insect chitin.

The approach herein proposed and the design of the consortium, selecting the most appropriate partners to participate in this initiative, makes this proposal fitting properly in the innovation segment "Zero Waste Agenda".

The main expected outcomes are the following:

- propose and exploit circular economy solutions to valorize secondary raw materials to grow insect larvae by creating new scenarios in which poultry husbandries can build insect growing facilities, in which **insect larvae** are **fed on by-products**;
- improve **animal welfare** and health;
- increase farmer and consumer awareness of products obtained by animals reared in enriched and, as a consequence, more natural environments.

The outcomes of the project will impact society by reducing the environmental impact and by meeting the increasing consumer demands for **healthier poultry products** that are produced using high welfare standards.

This proposal will also sensitize the farmers on environmental issues by recommending the employment of practical devices whose costs are offset by improved animal performance and that can lead to potential market premium. The outcomes of this project will be promoted to the general public and to target groups, according to the vision and objectives of the EIT food.

PARTNERS

026 - Maspex

047 - University of Turin

068 - ZPOW Agros Nova

512 - Entomics

INNOPOULTRY. The poultry food chain: tackling old problems with innovative approaches



1. INNOVATION

Year - 2018

Total cost of the project - 581.970 €

EIT Funding to UniTo - 176.125 €

Segment - **Zero Waste Agenda**

Activity leader - **Cocolin, LC (Luca) | University of Turin (UniTo) |**

UniTo's Role - **Coordinator**

Contact Person - **Luca Cocolin**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

The aim of this project is to test and to promote solutions for the poultry industry in Italy, Poland and Spain in the area of safety risks for public health. **Innovative ingredients** (insects and fruit pomace) and **new feeding strategies** (probiotics) will be used to allow sustainable productions, to reduce pathogens and antibiotic resistance in the gastrointestinal tract resulting in an improvement of **animal welfare** and of the **safety** and the quality of **poultry meat**. Breeders and consumers will have a central role to define the applicability and the acceptability of such approaches, respectively. The project will improve innovativeness for multiple stakeholders through engagement in learning processes, participation in supply chains, and benefiting from diffusion of technologies and knowledge developed in this project.

ACTIVITY PURPOSE

The poultry food chain suffers for old and long-lasting problems related to food safety issues (i.e foodborne pathogens and antibiotic resistance), particularly when intensive breeding is taken into consideration. In this proposal, we intend to tackle these problems by proposing innovative approaches, which will determine an **improvement of poultry production** systems and of meat safety and quality. EIT countries leader in the poultry production will first benefit from the outcomes.

EXPECTED OUTCOMES AND IMPACT

The poultry sector represents a relevant sector of the food production, with Italy, Poland and Spain representing countries with strong production capabilities able to cover the national needs and allowing for poultry and poultry products to be exported. However in order to help the poultry producers to address the still unresolved safety risks, new solutions need to be designed. In this project we will address this challenge by operating at primary production introducing innovative ingredients in the animal feed. **Insect derivatives**, **fruit pomace** and **probiotics** will be tested, and their effect on the safety risks reduction, through the modulation of the intestinal gut microbiota, will be determined. Benefits/added value will be delivered to several EIT countries from both CLC South and CLC North-East determining a cross-regional impact in European EIT regions.

The main expected outcomes are as follows:

- improve **food safety** of poultry meat;
- **involve breeders and consumers** in the decision making process regarding the use of insects in poultry production;
- design innovative approaches for poultry feeding, allowing the production of **new feeds** containing insects, fruits side streams, probiotics and prebiotics;
- creating an **open network** of relevant stakeholders in the involved regions.

The outcomes of the project will impact society by improving the protection of the consumer from foodborne diseases, initially in several EIT countries, but further in all EU, consider the high possibility to extend the approaches used to all European poultry production systems.

PARTNERS

003 - AIA
020 - Grupo AN
026 - Maspex
032 - Institute of Animal Reproduction and Food Research
047 - University of Turin
067 - Tymbark - MWS
525 - Microbion

The background of the slide features a photograph of a student with long blonde hair, wearing a blue shirt, sitting at a desk and writing in a spiral-bound notebook with a black pen. The image is partially covered by a large, semi-circular purple overlay on the left side. The text '2.' is written in white on this overlay.

2.

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EDUCATION



Years - 2019/2020

Total cost of the project - 1.998.795 €

EIT Funding to UniTo - 257.500 €

Segment - **Grand Challenges**

Activity leader - **Brereton, PA (Paul) | Queen's University Belfast |**

UniTo's Role - **Partner**

Contact Person - **Lorenza Operti**

Department involved - **Chemistry**

PUBLIC ACTIVITY DESCRIPTION

WeValueFood (3 yr project) will enhance consumer health and support the European Agri-food economy by improving future generations' knowledge of, and engagement with, food. Novel approaches will be used to engage with next generation audiences: students from primary to tertiary education. Following a pan-European inventory of current tools and resources; novel engagement and education approaches (e.g. gamification, txokos, food interest groups/collectives, "twinning", science meets food) will be used to produce our future food champions who will communicate **food values through digital media** platform(s) of their choosing. WeValueFood will be supported by a pan European network of high profile food ambassadors and stakeholders. Industry will "relearn" to engage with our youth on food values. The project will be scaled-up across Europe, targeting regions where a greater engagement and understanding of food is needed in order for the next generations to make the best choices of the food they eat.

ACTIVITY PURPOSE

In year 2 of this 3 year Grand Challenge, we will test and evaluate the efficacy of existing and modified tools, and test novel engagement strategies, to create next generation food champions, who will disseminate and communicate the WeValueFood message widely using their networks and social media platforms. In addition, in year 2, we will investigate how industry can re-learn ways to communicate with the next generation of consumer effectively, as a means to enhance food engagement/ knowledge and education. The piloting, evaluation and efficacy testing of a variety of food engagement approaches in year 2 will inform which tools/strategies/approaches will be scaled-up in year 3.

At the end of the project in year 3, we aim to have:

- An established **pan European network** of food aware next generation consumers
- A suitable pool of tools/strategies/approaches for **food education**
- Established **food champions** who are passionate and knowledgeable about food
- A more interconnected structure between agri-food and education sectors for co-creation and information exchange on food
- A well-established **social media presence** with a minimum of 200,000 subscribers by end of 2021

Year 1 focused on identifying current tools/strategies and gaps in learning needs and year 2 builds on this by focusing on piloting and testing new/modified tools, prior to scale up in year 3.

Overview of 2020 WPs:

WP1

Modification and piloting of selected tools/strategies

Selection, modification and piloting of existing tools/strategies for engagement with next generation consumers in several countries. Further testing of Decision Making Framework

WP2

Education and Engagement of Consumers via co-creation

Co-creating of new tools/strategies for engagement/education of next generation consumers. Iterative co-creation among researchers, educators, industry and students will focus on understanding how to educate/engage consumers on food.

WP3

Producing the first food champions

Identification of different ways of successfully developing (fast-tracking) the first food champions using practical intervention strategies and support mechanisms.

WP4

Industry re-learning novel ways to communicate

investigate how best industry could communicate with future consumers about food. Understanding what next generation consumers want to know about food, their food values.

WP5

Communication and Dissemination

Facilitate sharing of the new and improved tools, and maximising opportunities for food champion communication

EXPECTED OUTCOMES AND IMPACT

WeValueFood links to Strategic Objective 5 and ultimately aims to impact society in way that will educate, engage and advance the next generations knowledge, understanding and appreciation of food generally (nutrition, health, sustainability, security etc.). The **real impact** of WeValueFood will be realized **in the longer term**, and is dependent on our ability to ensure our next generation consumers are adequately educated and passionate about food. In 2020, the focus is on piloting and testing different approaches to enhancing food engagement among society (next generation consumers), and will determine which approaches are scaled up in year 3.

By the end of 3 years we aim to have:

- An established pan European network of food aware next generation consumers
- A suitable pool of tools/strategies/approaches for food education
- Established food champions who are passionate and knowledgeable about food
- A more interconnected structure between agri-food and education sectors for co-creation and information exchange on food
- A well-established social media presence with a minimum of 200,000 subscribers by end of 2021

In 4-10 years:

- A new pan-European generation that is much more **food aware**, who value food, and are proactive
- A society that is more knowledgeable and discerning about the food they eat in terms of nutrition, supply chain, quality standards and sustainability, and of the industry that produces it
- A closer **link between consumers and the food industry**
- **Food for health** and a healthy environment agenda delivers financial benefits for the economy and European citizens and transforms the image of the industry
- **European Agri-food economy thrives** due to increase in product differentiation and added value, due to next generation consumer choices and values. Similarly exports to developing economies increase as their citizens demand high quality European products with assured integrity.

PARTNERS

006 - Universidad Autónoma de Madrid

016 - EUFIC

023 - Koppert

027 - Matis

034 - Queen's University Belfast

043 - University of Cambridge

044 - University of Helsinki

046 - University of Reading

047 - University of Turin

048 - University of Warsaw

097 - IMDEA Food Institute

514 - Flatev

European Food Systems Education and Training (EFSET)



2. EDUCATION

Years - 2019/2020

Total cost of the project - 590.349 €

EIT Funding to UniTo - 117.823 €

PUBLIC ACTIVITY DESCRIPTION

The European Food Systems Education and Training (EFSET) programme addresses the increasingly challenging array of **food-related problems**, such as food **waste** or **malnutrition**. Through multidisciplinary and collaborative approaches that simultaneously target different parts of the food system, the course gives postgraduate students the confidence and skills necessary to bring about positive change. Building on the first year of the programme, EFSET provides students at European universities unique and exciting opportunities to address real-world Food System Challenges set by industry partners.

Through a series of **innovative, on-line modules** and **face-to-face skills workshops**, as well as opportunities to participate in a fully-funded international Away Weekend and a Summer School, students receive training in food systems analysis and intervention strategies, and experience the challenges of interdisciplinary teamwork. Having participated in this training, EFSET students will enter the workplace able to demonstrate an enhanced professionalism through combining strategic food systems thinking with the technical skills developed through their postgraduate studies.

ACTIVITY PURPOSE

EFSET aims to **bridge the divide** that exists between the skills required by the **food industry** and the training offered by the **higher education sector**. The complex nature of food system problems means that they are often not easily reducible to technical, single-disciplinary solutions. Many postgraduate degree courses, however, have yet to incorporate skills training that supports students working effectively in a more holistic, interdisciplinary manner. EFSET aims to address this gap in a way that is pedagogically innovative and institutionally sustainable over the long term.

In 2020, EFSET will have three aims. The first will be to complete Year 1 of the programme, continuing and finishing the 2019/20 academic year, culminating in a Summer School in August 2020. Second, in September 2020, it will launch Year 2 of the programme, with a new academic and industry partner on board, and a new cohort of postgraduate students. Third, it will continue the progression of the programme towards the establishment of regional system thinking 'hubs' in 2021/22.

The continuation of educational activities for the 2019/20 academic year will see students engaging with two additional online units on using methods for food systems analysis and intervention strategies. These units will be supported by two face-to-face skills development workshops that will provide students with opportunities to consolidate and apply their learning. Throughout the year, students will engage with **Food System Challenges**, case-study materials co-created with workplace partners that consider the effects of food system-level issues on their different organisations. Students will work collaboratively on innovative intervention strategies to address the Challenges at a two-day Away Weekend and five-day Summer School, and these new strategies will be presented back to the workplace partners at the end of the Summer School.

There are presently three academic and three industry partners in EFSET (for 2019/20), and in 2020/21 this will expand to four. Each academic partner has a PI, who provides leadership and oversight, and an **Education Coordinator** (EC), who is responsible for the day-to-day running of the programme. KAVA is therefore required to fund these personnel. In addition, KAVA will be required for the production of educational materials (including the ongoing maintenance of a Virtual Learning Environment) and travel and subsistence, including funds for student mobility.

Segment - Master Programmes

Activity leader - **Arnall, AH (Alex) | University of Reading** |

UniTo's Role - **Partner**

Contact Person - **Luca Cocolin**

Department involved - **Agricultural, Forest and Food Sciences**

We will pursue regional hub development as a means of scaling-up the EFSET food systems model within the EIT Food network and beyond. To do so, we will aim to develop new material following a 'train the trainer' format. This will lead to the creation of new **EFSET 'champions'** who will be trained in EFSET approaches and methodologies, and who will be employed by companies and other organisations to lead on implementing systematic change through system thinking.

EXPECTED OUTCOMES AND IMPACT

In 2019 we expect a cohort of at least 150 students to enrol onto the EFSET programme for the 2019/20 academic year. In 2020 we expect that at least 200 students will form a new cohort for the 2020/21 academic year.

All participating students will benefit from a range of new and **innovative teaching and learning materials** that focus on strategic analysis and effective intervention in **food systems**. These materials will enhance student performance in their Masters and PhD programmes by improving their metacognitive skills, and by providing invaluable interdisciplinary, intersectoral and international group-work experiences. Students will have the opportunity to apply to attend an Away Weekend and Summer School to refine their food systems learning, problem-solving skills (SO 6), and further develop their professionalism and employability. All EFSET students will have access to an **alumni community** to inspire and support them as they enter the workplace. These activities directly support EIT Food's SO 5.1 by providing opportunities to students who might not be able to access the Food Masters.

Our **industry partners** will benefit from interacting with **high calibre students**, and from having their Food System Challenges addressed through **co-created project work**. Participating universities will benefit from more confident students who have been supported in critically engaging with food systems issues. University staff will benefit from exposure to new pedagogic theories and practices.

When EFSET alumni enter the workplace, society will benefit from having individuals who can better understand the nature of food system challenges and how to go about solving them.

From a programme perspective, EFSET will seek **synergies with other EIT Food activities** (such as the Rising Food Stars) and wider EU programmes (such as ERASMUS). The ultimate output will be food system 'hubs', regional 'flagship' centres of excellence on food systems thinking.

PARTNERS

006 - Universidad Autónoma de Madrid

020 - Grupo AN

022 - John Deere

030 - PepsiCo

045 - University Hohenheim

046 - University of Reading

047 - University of Turin

097 - IMDEA Food Institute

550 - Agricola

Food System Master of Science Program



2. EDUCATION

Years - 2018/2020

Total cost of the project - 5.497.050 €

EIT Funding to UniTo - 392.830 €

Segment - **Master Programmes**

Activity leader - **Vanrintel, D (Desi) | EIT Food |**

UniTo's Role - **Partner**

Contact Person - **Luca Cocolin**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

The flagship **Master in Food Systems programme** is EIT Food's unique offering to **develop top talent for the food sector**. The programme is based on a combination of essential skills to become effective innovators and entrepreneurs in the food sector along with key technical skills that are tailored to the individual career pathway for each student. The Masters in Food Systems programme is fundamentally distinct from what any of the **KIC** Universities are offering at the moment, and indeed unique for the sector and beyond. The programme is based on a **T-model approach**, where broad competences regarding food systems knowledge and innovation and entrepreneurship are combined with in-depth technical skills as specified by industry.

The programme will be scaled in 2020, with the inclusion of two additional universities offering the degree for the second cohort of the programme. Also in 2020, the Consortium will offer the Summer School and the Emerging Technologies Business Case Study modules for the first cohort (started in 2019).

ACTIVITY PURPOSE

The goal of this activity is to **develop a compelling curriculum** for EIT Food's flagship Integrated Food System Master's Programme that will be offered by 9 of EIT Food's academic partners in 2019. The programme is to attract an elite group of students across the EU that have previously obtained degrees in different disciplinary backgrounds. With personalised study plans it allows for a unique integration of different aspects of the food system making them a new breed of food entrepreneurs.

EXPECTED OUTCOMES AND IMPACT

The integrated **Master in Food Systems** will equip a new generation of top talent with the skills, competences and knowledge to become innovators and entrepreneurs in the **Food sector**. The approach of the programme is unique in how students can select study pathways from a wide range of profiles to suit their career ambitions. The degree will provide a best in class, innovative educational programme that overcomes a number of challenges in the sector - the collaboration of industry in the development and execution of the programme ensures key employability criteria are secured and students have access to resources and insights from industrial partners and entrepreneurial ventures alike. The programme is based on a **T-model**, where broad competences regarding food systems knowledge and innovation and entrepreneurship are combined with in-depth technical skills as specified by industry.

With geographic and organisational mobility as a core feature, students will study at **3 different universities** and be exposed to a range of organisational settings to enhance their understanding of the food sector. Sustainability is built in through a focus on systems thinking to expose current and future challenges and to inspire highly creative solutions. Each possible career path has been verified by industry as being relevant for a specific part of the food system to ensure the programme addresses key skills required in the sector.

The programme will continue **in 2020 with 8 universities**, offering **24 unique paths** for students to choose from.

Overall, the **Master programme is a second cycle degree program** having a total of **120 ECTS** (or equivalent) at each university.

The programme will develop the following **competences**:

- Food systems skills, including sustainability challenges (7.5 ECTS)
- Innovation and entrepreneurship skills (30 ECTS)
- Subject knowledge including primary production, manufacturing, distribution, marketing, nutrition and/or waste, depending on path chosen (82.5 ECTS)

A second level degree corresponds to **EQF Level 7** with all universities being accredited at local level (institution or program), assuring the overall quality level, and all EU universities involved adopt the **EQF framework**. The programme will also apply for the EIT Label, which is an additional quality assurance from EIT itself.

As this project is a continuous project, which started in 2018, and having the first intake of students in 2019, the main output for 2019 is the programme itself. The outcome of educated students are expected in 2021 when the first cohort graduates. The **KPI** numbers mentioned in this **KAVA** are the numbers expected, although the actual numbers depend strongly on the recruitment process & overall quality of students.

PARTNERS

001 - EIT Food IVZW
006 - Universidad Autónoma de Madrid
011 - CSIC
020 - Grupo AN
022 - John Deere
026 - Maspex
030 - PepsiCo
034 - Queen's University Belfast
043 - University of Cambridge
045 - University Hohenheim
046 - University of Reading
047 - University of Turin
048 - University of Warsaw
049 - Valio
051 - ABP Food Group
054 - Waitrose
099 - University of Aarhus
110 - LU Lund

Professional Development Framework



2. EDUCATION

Years - 2018/2020

Total cost of the project - 2.440.543 €

EIT Funding to UniTo - 181.875 €

Segment - **Professional Education**

Activity leader - **Van der Kamp, M. (Maarten)**
| **EIT Food** |

UniTo's Role - **Partner**

Contact Person - **Paola De Bernardi**

Department involved - **Management**

PARTNERS

001 - EIT Food IVZW
007 - AZTI
009 - Bühler
015 - ETH Zürich
018 - Deutsches Institut für Lebensmitteltechnik
023 - Koppert
024 - KU Leuven
026 - Maspex
028 - Nestle
030 - PepsiCo
035 - Raben
036 - RisingFoodStars
043 - University of Cambridge
046 - University of Reading
047 - University of Turin
048 - University of Warsaw

PUBLIC ACTIVITY DESCRIPTION

EIT Food's Professional Development Framework aims to provide a key resource for the food sector by creating an **integrated approach** to develop a **skilled, innovative workforce**. This activity will propose a framework, and consult with partners, in preparation for five pilot programmes to be run in 2019.

ACTIVITY PURPOSE

EIT Food's Professional Development Framework aims to provide a key resource for the food sector by creating an integrated approach to develop a skilled, innovative workforce. This Activity will propose a framework, consult with partners, and prepare for **five pilot programmes** to be run in 2019 to provide examples of development for different constituents: graduates, established employees (technical and managerial), top talent, and entrepreneurs.

EXPECTED OUTCOMES AND IMPACT

The food sector in Europe represents the biggest manufacturing sector in terms of jobs. However, this sector is refractory to new emerging technologies mostly because of lack of sufficient advance skills and competences coupled with a continuous professional development. The Professional Development Framework will in part compensate by **providing professional development courses** with a clear guidance for the creation and delivery of a variety of learning opportunities relevant to the developmental career of individuals and the transformation of the food sector, to generate professionals with relevant key skills to employees.

The project's outputs and outcomes will be:

- A comprehensive **skills map** outlining the skills, competences and knowledge required for innovators at different levels in food sector
- A **professional development framework** with clear pathways for vocational and professional training. This framework will be based on certificates and micro-credentials through which competences are demonstrated, and will provide clear standards for training providers and buyers regarding learning outcomes, course content and innovations in teaching and learning
- Developing **innovative training** to equip the intellectual capital with the skills necessary to solve the food-sector challenges.

Global Food Venture Program



2. EDUCATION

Years - 2018/2020

Total cost of the project - 2.900.000 €

EIT Funding to UniTo - 123.625€

Segment - **PhD Programmes**

Activity leader - **Van der Kamp, M. (Maarten) | EIT Food |**

UniTo's Role - **Partner**

Contact Person - **Paola De Bernardi**

Department involved - **Management**

PUBLIC ACTIVITY DESCRIPTION

The flagship **Global Food Venture programme** is EIT Food's dedicated offering to **doctoral students** working on **challenges in the food sector in Europe**. The programme enables **50 highly qualified PhD students** from across Europe to turn their innovative research into successful **business propositions in the food & agtech space**. It strives to raise awareness of the existing issues and challenges, cultivate an entrepreneurial mindset and educate in the area of leadership, entrepreneurship & business creation. Young innovators broaden their thinking and gain essential skills & knowledge through an intensive curriculum of workshops, events, meetings with technology experts and corporate site visits. Finally, PhD students profit greatly from a tailored mentorship programme and have the unique chance to gain insight into key entrepreneurship ecosystems and innovation cultures in Europe or other continents.

ACTIVITY PURPOSE

The aim of the GFVP is to create a **highly talented and entrepreneurial PhD pool** in order to catalyse transformations in the agrifood sector in Europe. The programme raises awareness of the current Food issues and challenges, educates PhD fellows in the area of business creation, cultivates a resilient and flexible mindset, provides access to a network of experts and exposes the young innovators to successful entrepreneurship ecosystems and cultures e.g. in the EU or the US. The total target number of PhD students in the GFVP activities in 2020 is 50, increased from 25 participants in 2018.

EXPECTED OUTCOMES AND IMPACT

The PhD students are educated and trained to become the new **frontrunners** in the transition of the **Food sector**, especially on the topics of health and nutrition, sustainability, and trust. They will have the opportunity to either work on their own **start-up company** or work within the **business creation department of one of the EIT Food partners**.

New validated concepts, working prototypes, business plans and start-ups and spin-offs are tangible outcomes. PhD students of GFVP will be able to leverage the EIT Food ecosystem. The programme will be an important feed of participants to the incubation and accelerator programmes of EIT Food. Connection of **Global Food Venture** fellows to other EIT Food activities, like the **EIT food accelerator programme**, **Seedbed the Rising Food Stars** and seed funding opportunities will allow them to take the next steps into the implementation and commercialisation of their idea with ultimate goal the new business creation in Europe which will lead to new jobs and investments.

PARTNERS

001 - EIT Food IVZW
006 - Universidad Autónoma de Madrid
014 - EPFL
015 - ETH Zürich
024 - KU Leuven
034 - Queen's University Belfast
041 - Technische Universität München
042 - Technion
047 - University of Turin
048 - University of Warsaw
099 - University of Aarhus

Summer School on “Entrepreneurship for food product innovation”

Years - 2018/2019

Total cost of the project - 199.500 €

EIT Funding to UniTo - 126.062,50 €



2. EDUCATION

Segment - **Multi-Level Programmes**

Activity leader - **Berruto, R. (Remigio) | University of Turin (Unito) |**

UniTo's Role - **Coordinator**

Contact Person - **Remigio Berruto**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

The consortium will implement a Summer School (SumS) on “Entrepreneurship for food product innovation”. Its ambition is to train groups of students from different backgrounds within the Food research area in creative thinking, innovation and entrepreneurship, with the final objective of translating research into real-world businesses.

This activity will be based on the **flipped classroom concept**: the training will be delivered through a mix of online training sessions and in-class courses. The in-class activities will involve 4 food industries and will be set in a competitive environment to engage talented students. 4 prizes to best projects and individual impact on social media will be awarded. The long term main expected the impact of SumS is the creation of innovative products and companies in the food sector. The consortium plans to develop and implement a new comprehensive, **tailor-made training content** (online and in-class) every year until 2020 and then to offer cycles of training.

ACTIVITY PURPOSE

The educational activity aims to deliver a Summer School on “Entrepreneurship for food product innovation”. The aim is to foster entrepreneurship and innovation for students interested in food product innovation, through teaching and practice related to design thinking, ideas generation, financing, IP, and project management, business models and business plan. Four agrifood industries participate in the training. Four Awards will be provided to the best teams and to communication impact.

EXPECTED OUTCOMES AND IMPACT

The activity’s main expected impact is the creation of innovative products and companies and the education of new talents. The activity will have impacts on several targets:

Trainees

Students, entrepreneurs will benefit from the SumS by receiving a **high-quality training** based on an innovative learning method, accompanied with in class activities and training in collaboration with agrifood industries (wine, cheese, rice and salami). Participants are then expected to be more willing to develop innovative food products or businesses. They will compete to make the best business case, according to industry needs.

Consortium

The consortium will develop a training based on **cutting-edge didactic approaches** (e-learning, flipped classroom, participant-centered-learning) on the most relevant topics around entrepreneurship and innovation in food industries. It will allow the consortium to expand its existing training offer and to become references in the field. Moreover, this activity will allow it to experience the flipped classroom concept.

Agri-Food Industries

They will benefit from the activity by having students/professionals not only technically prepared at the research and innovation level but also at the market, financing and IP level that implies incremental or radical innovation for a food product. Trainees will not only enhance their capability to start up ventures in the food industry, but they will also be able to initiate **entrepreneurial projects** within established corporations of the food sector. The connection between science and business reality will be emphasised in the class as four food industries will be involved in the design phase and in the face-to-face activities of the SumS.

Society

The activity deals with one major European societal challenge: “**Agri-food sector for a safe and healthy diet**”. Through a specific training that addresses this topic, the students will have the chance to create new products and companies that address this challenge.

PARTNERS

045 - University Hohenheim
047 - University of Turin

Curating citizen engagement: Food solutions for future generations



2. EDUCATION

Year - 2020

Total cost of the project - 210.422 €

EIT Funding to UniTo - 27.099 €

Segment - **Studio programmes**

Activity leader - **Wang, QJ (Qian Janice)**

| **University of Aarhus** |

UniTo's Role - **Partner**

Contact Person - **Silvia Gattino**

Department involved - **Psychology**

PUBLIC ACTIVITY DESCRIPTION

The Curating Citizen Engagement project will revolutionise our way of solving grand societal challenges by creating a platform for massive public involvement and knowledge generation, specifically targeting food-related issues. Through a university course developed by partners representing different aspects of the food ecosystem (from sensory perception to nutrition to food policy), we will educate the next generation of students to be able to **engage** and involve the **public in tackling food-related societal challenges**.

The students will learn iterative prototyping skills in order to create museum installations with built-in data collection points, that will engage the public and assist in shaping future food solutions.

Thus, citizens are not only provided with knowledge on food related topics, but are empowered and encouraged to actively use it, leading to more trust in the food sector in general.

ACTIVITY PURPOSE

The aim of this hybrid education+communication project is to revolutionise our way of solving grand societal challenges by creating a **platform for massive citizen engagement and knowledge exchange**, specifically **targeting food-related problems**. We achieve this by educating the next generation of students to engage the public in societal challenges - such as nutrition and health, urban food policy, and consumers of the future - through high impact communication platforms. Through these communication platforms, which will take the shape of interactive museum installations with built-in data collection points, we will involve the public in shaping future food solutions and increase their trust in the food system at the same time.

We envision a two-year hybrid project with an Education Initiate programme for the first year and Communication Explore programme for the second year. The project consists of a **university course** (Education Initiate programme) on how to engage the public in tackling food-related societal challenges with all partners contributing competencies in specific food areas. The target group for the course are final-year university undergraduates as well as masters students, coming from multiple disciplines (e.g. food science and technology, health, engineering, design, etc). The lectures will be recorded and available online for future distribution. During the course, the students will first develop a pilot installation and then later a final **installation for one of the local partner museums** (Communication Explore programme).

The target group for the museum installations will involve people of all age groups, especially adolescents and Millennials who will be shaping the future of the food ecosystem. Data collected from the installations will be analysed by the students as well as the academic partners.

The outcomes of this project are multifaceted. We will:

1. **Educate students** in a novel, cross-disciplinary way of problem solving as well as
2. Provide them with a solid grounding in fundamental components of the **food ecosystem**
3. This education has overarching relevance for **solving food related challenges**, and provides the foundation for a massively scalable platform for educating future students.

4. Through **museum installations**, we will not only educate the public about the food ecosystem but also engage them in co-creating solutions to societal challenges. This way, the food sector will become more accessible and trustworthy
5. The installations will open up new ways of maximising the value of museums as high impact **communication platforms**
6. Students will adopt entrepreneurial cross-boundary thinking, enabling the integration and proliferation of end-**user engagement** for future society empowering food solutions.

EXPECTED OUTCOMES AND IMPACT

The Curating Citizen Engagement project enables students to tackle food-related societal challenges in a whole new way. Students will be empowered to use creative ways to solicit active participation from the public, while at the same time **increasing people's trust in the food system**.

The course fosters interdisciplinary thinking by putting together students from multiple disciplines (food science/ technology, health, design, etc.). Furthermore, it will be taught by partners across Europe, giving students comprehensive insight into cutting-edge research in the food ecosystem. In addition to extensive theoretical input, students will get ample hands-on practical experience and mentorship from local industry partners. During the course, students will work in groups to identify a challenge, brainstorm ways of **co-creating solutions** with the public, **build a prototype**, test the prototype in a public event, analyse collected data, and integrate feedback to come up with a final installation that will run for an extended period of time at a local museum. Therefore, students will gain valuable skills such as working collaboratively, problem solving, data collection and analysis, rapid prototyping, and iterative design.

The course will deliver **24-32 skilled students** at the end of the program.

From the citizen angle, the public will actively contribute to the installations which will empower them to think about and put more trust in the food sector in general. In year two (2021), the museum installations will be set up in 3 countries with massive public outreach and engagement (over 2000 people). The installations will also open up new ways of maximising the value of museums as **high-impact two-way communication platforms**. Furthermore, the course will be developed into a MOOC module in 2021, extending the scope of co-creation thinking beyond select university students. In addition, we plan to run a Hackathon in 2021 to bring public engagement thinking to food businesses as well as students.

PARTNERS

006 - Universidad Autónoma de Madrid

011 - CSIC

034 - Queen's University Belfast

047 - University of Turin

097 - IMDEA Food Institute

099 - University of Aarhus

Transparent Food Supply Chains – Entrepreneurial Summer School



2. EDUCATION

Year - 2020

Total cost of the project - 121.250 €

EIT Funding to UniTo - 64.375 €

Segment - **Studio programmes**

Activity leader - **Pretschner, AP (Alexander)**

| **Technische Universität München** |

UniTo's Role - **Partner**

Contact Person - **Remigio Berruto**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

Challenges in today's Food System are complex and interconnected – to address them, innovative solutions along the entire value chain are required. This entrepreneurial Summer/ Winter School aims to educate students and young professionals from different backgrounds to bring novel perspectives into the discussion. The focus lies on the challenge of making **food supply chains more transparent** to ensure accountability along the value chain and increase consumer trust in food products.

Guided by experts from academia and industry, participants will get detailed insight into current trends and challenges along the food value chain and identify current market needs. Split into interdisciplinary teams they learn methodological skills in ideation, business creation, and product development, enabling them to develop business concepts and **prototype consumer-centric solutions**. The final prototypes are presented in a pitch event and synopses are published on the website of the consortia partners and social media channels.

Successful participation will further strengthen students' ability to think out of the box, self-organize cross-functional teams and effectively communicate across different disciplines. Students will be able to make informed decisions about their future career as either an entrepreneur, **researcher or intrapreneur in the food industry**. Promising MVPs will have the chance to get support in the EIT Food Accelerator Network FAN.

ACTIVITY PURPOSE

1. Main Purpose

The main purpose of the Transparent Food Supply Chain Entrepreneurial Summer School is to provide participants/ students from a diverse and international **set of backgrounds** – with insight into current academic/ industry trends **along the food supply chain** and empower them to become responsible future innovators within the field and beyond. Over the course of the 1-week-long summer school students will apply the taught content in a project-based learning approach supported by lecturers from both UniTo and AU as well as experts from industry partners. Recent advances of digital technologies, predominantly Distributed Ledger Technology (Blockchain), provide a unique opportunity and fertile starting point for developing innovative solutions to bring more transparency into the supply chain. However, the technology itself is complex to understand – therefore we plan to include a dedicated session to foster better understanding among participants.

2. Anticipated Outcome

Students will understand current trends and challenges along the food value chain and will be able to identify market needs, ideate for solutions, and develop **future-oriented business models**. They understand principles of distributed ledger technology and can assess how it can be used in digital business models. Furthermore, they will have gained an understanding and first practical experience in prototyping solutions. Successful participation will further strengthen students' ability to think out of the box, self-organize cross-functional teams and effectively communicate across different disciplines and cultures.

3. Benefit Over Existing Programs

The course significantly differs compared to classic university courses since students work together in **interdisciplinary** and international/intercultural teams to work on real-world challenges using digital technology. Combining expert-led input sessions with project-based learning allows students to apply the taught content immediately and gain the confidence to do so outside the classroom.

Having access to international experts – from UniTo, Aarhus University, Ambrosus and other industrial leaders – allows students to extend their network across borders and establish relevant relationships. Team-based activities and access to relevant digital tools further enables students to express their ideas, effectively communicate them and demonstrate **prototypical solutions**.

EXPECTED OUTCOMES AND IMPACT

The Transparent Food Supply Chains – Entrepreneurial Summer School enables participants to become responsible future innovators, which is equally important for the economy as well as the society. Participants will be empowered to employ methodologies to identify current trends/opportunities/challenges and develop future scenarios. They will furthermore learn how to apply ideation techniques in practice. Thereby, the participants will develop an understanding of **future-oriented business models**. Extensive theoretical input and practical experience regarding the Design-Thinking approach and methodologies to explore customer needs, reach the best problem definition, ideate for solutions, state hypotheses, rapid prototype thoughts/ideas, and finally test and verify them and integrate feedback will be given through an innovative project-based learning (PBL) approach.

Furthermore, scientific and theoretical input and practical experience regarding agile prototyping, lean startup, business planning, business modeling and marketing will be part of the curriculum. Participants will therefore be able to critically and precisely assess entrepreneurial concepts, communicate and present professionally, and have gained **interdisciplinary and intercultural skills**.

Furthermore, the Summer School fosters an integrative process involving academia (ensuring the necessary theoretical standards), industry (ensuring practical relevance), and interdisciplinary participants.

During the program, citizens - university students, PhD/Post-Doc candidates, young professionals (from the fields of food, environment, health, technology or engineering) - will work together in mixed teams, and this will result in prototype development with corresponding value propositions. The goal is to open up new lines of thoughts. Coaching from academic partners, industry partners, as well as startups will ensure the economic value of the business ideas. Furthermore, promising ideas and teams will get the chance to **submit their concepts** to the EIT Food Accelerator Network FAN.

PARTNERS

047 - University of Turin

099 - University of Aarhus

557 - Ambrosus

MICROBIOME PUSH: Into the Microbiome Application in Food Systems



2. EDUCATION

Year - 2020

Total cost of the project - 250.338 €

EIT Funding to UniTo - 74.000 €

Segment - **Studio programmes**

Activity leader - **Cocolin, LC (Luca) | University of Turin (UniTo) |**

UniTo's Role - **Coordinator**

Contact Person - **Luca Cocolin**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

In the Food Solutions "MICROBIOME-PUSH: Into Microbiome Exploitation in Food Systems" we will focus on the **applications of microbiomes in different segments of the food chain**. Students recruited at the four universities within the consortium will be exposed to unique opportunities to interact with academics, entrepreneurs and researchers, experts in different segments of the food chain.

During the food solution program, students will be invited to an opening event where the main topics will be introduced and the challenges will be formulate. **Interdisciplinary student groups** will be formed and they will start to work towards microbiome-based solutions to the challenges. In the opening event, students will follow entrepreneurial lectures thereby ensuring these skills are integrated in the final solutions to the challenges. Mentors from academia and the food industry will be assigned to the groups (with a mix of competencies) and they will help the students by providing guidance and direction to help them develop the solutions to the challenges. Throughout the year, the groups will be followed and mentored in order to help them **develop the innovative solutions**. In the final event in Israel, the groups will presenting the outcomes of their work.

ACTIVITY PURPOSE

Microbiomes are defined as the microbial populations present in a specific ecosystem in a certain moment in time and includes their spectrum of activities. This definition underlines how microbiomes have a primary role in shaping the behaviour of an environment and impact its characteristics.

The microbiome concept fits very well in the context of the food systems, as a matter of fact they can **contribute** (both in a positive but also in negative way) **in the production and processing of foods**, as well as having an important role in influencing human health.

The application of microbiomes is new in the food chain and offers possibilities that are in line with the request of the consumers of foods that are more "natural" (low use of chemicals in both production and processing), sustainable and healthy.

MICROBIOME-PUSH represents a unique opportunity for the students, who will be invited to investigate new ways of **exploiting microbiomes to address specific food industry needs**. The students will be exposed to entrepreneurial thinking and have the chance to take advantage of smart ideas in the microbiome research field to generate new business opportunities.

EXPECTED OUTCOMES AND IMPACT

The way foods are produced has changed in the last twenty years and there is a continuous evolution in technologies and approaches used. Moreover, consumers have become an important and central element that has to be taken into consideration when new products and services are developed and offered in the market.

In order to address this changing scenario, the food sector is trying to adjust in order to cope with the new requests, and probably one of the most important aspects that is implemented nowadays is the shift from silos to systems thinking. Food systems is a new way in which the food value chain is analyzed and how the different segments of which it is composed are linked and interconnected. Food can no longer be produced, transformed, distributed and consumed without taking into consideration what is happening in each of the phases that constitute the value chain. In this context, the food solutions project "MICROBIOME-PUSH: Into the microbiome exploitation in food systems" aims to educate students from different subject backgrounds about **how systems thinking can be applied in the food sector**, specifically **focusing on the possible exploitation of microbiomes**.

On the one hand, we aim to improve the ability of the students to think critically about solutions that could be exploited at industrial level, based on a systems thinking approach. On the other hand, an objective of this food solutions project is to create strong **research competence in microbiome** understanding, function and application. The latter has been identified as one of the enablers to address current challenges in food science & technology, as indicated in the European Strategy Food2030.

PARTNERS

030 - PepsiCo

033 - Puratos

042 - Technion

044 - University of Helsinki

046 - University of Reading

047 - University of Turin

550 - Agriculus

REPACK IT - packaging sustainability, a full system approach



2. EDUCATION

Year - 2020

Total cost of the project - 226.125 €

EIT Funding to UniTo - 103.750 €

Segment - **Studio programmes**

Activity leader - **Corredig, M (Milena) | University of Aarhus |**

UniTo's Role - **Partner**

Contact Person - **Patrizia Busato**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

We have an urgent need to deliver innovative **food packaging solutions** that will be **more sustainable**. This is an urgent need that requires tremendous collaborative efforts, in an environment still very fragmented, from municipalities recycling policies, to consumer demands, to technical challenges in supply chain and distribution, and of course, food quality and safety of the product. The consortium is aware that many of the innovative solutions are proprietary in nature, and exchanged in B2B environments. We plan to build new content, co-created with industry, being inclusive of the most innovative companies in Europe, this content that will be delivered in a summer school in food packaging entrepreneurship.

The activities will begin with a co-creation shadow program, focused on finding the missing links in the food system and identify potential solutions, and misconceptions. Our ambition is to train groups of students from different backgrounds within the food research area in creative thinking, innovation and entrepreneurship, with the final objective of translating their findings into **real-world business solutions**. Training will be delivered through a mix of in-class guest lecturers, which will include material producers, equipment producers, food science experts, municipalities and supply chain and marketing. There will be two awards for the best solutions provided after the in depth analysis carried out on the entire food system the following week.

ACTIVITY PURPOSE

The consortium will develop a Summer School on sustainable food packaging entrepreneurship. We are at a critical, historical time for packaging applications in foods. The market is fragmented, in a sector very consolidated, with a massive pressure from the outside for change. All food processing companies, all the way to retailers, are looking for solutions. Of course, there is a tremendous need of coordination, science based policies and municipalities buy in. This small consortium has an ambitious plan. To engage a **“willing coalition” of entrepreneurs and industry**, in the co-creation of an “agenda free” content to build the basis of a summer school in food packaging entrepreneurship. For the first part of the year, the UniTo and Aarhus will engage PhD students and postdoctoral fellows and create a **shadow-mobility program**. This will allow the consortium to interview and assess problems related to the entire food chain, and to record the state-of-the-art status of this fragmented system, finding the missing links in the food packaging chain, ultimately identifying potential solutions, and misconceptions.

Our industry partner, PepsiCo, will ensure relevance and assist in network development. Our ambition is to use the content created during the shadow-mobility phase to build the SumS curriculum and train the participants of different background in creative thinking, innovation and entrepreneurship, with the final objective of translating their findings into real-world business **solutions in sustainable food packaging**. Successful participation will strengthen students' ability to organize cross-functional teams and effectively communicate with industry, municipalities and across different disciplines. A month before the course, the content will be available on line and the summer students will be able to prepare themselves to the summer school in business entrepreneurship where they will be free to pick a piece of the larger puzzle, from packaging materials, to films, all the way to recycling and composting.

The training will be delivered by a mix of academic partners, but most importantly world renown experts and industry leaders in Corporate social responsibility. The students will spend one week identifying the gaps and provide business focused solutions on **how to advance the packaging sustainability agenda**. One day will be also dedicated to communication training, with social media messages to educate consumers on sustainable packaging. 2 prizes for the most business oriented solutions and individual impact on social media will be awarded. The consortium ambition is to be able to deliver the summer school in subsequent years in other European institutions, and use the shadowing methodology to create new collaborative approaches to deliver new solutions in the knowledge triangle of sustainable packaging.

EXPECTED OUTCOMES AND IMPACT

The activity's main expected IMPACT is the education of new talents to address the current and future market need but also the creation of innovative products and start-ups. In 2020, Aarhus University will host for the first time, a summer school in packaging entrepreneurship, together with the University of Turin & PepsiCo. This is a unique consortium, with strong expertise in consumer behaviour, entrepreneurship, food quality and processing, packaging, material Science, and supply chain. The **CONSORTIUM** will benefit from the crossover approaches, training, learning platforms, industry interactions, creating a one of a kind strength in the European landscape. The **STUDENTS** will represent the first cohort of its kind, innovators in a field in most need for novel, entrepreneurial and multifaceted, multidisciplinary solutions. Technology training mixed with business and communication training will create a new group of enablers.

The impact of this new education paradigm will be felt in the **ECONOMY**, as well as in **SOCIETY** and the **ENVIRONMENT**. Participants will be empowered to employ methodologies to identify current trends/opportunities/challenges and develop future scenarios. They will furthermore learn how to apply ideation techniques in practice. The communication training will also help the students develop a strategy and content for effectively communicate through social media the challenges, solutions and current misconceptions, related to food packaging sustainability. The material will be provided to the EIT communication team, to be used in their transparency agenda.

The **INDUSTRY** will benefit from the activity by having students professionals with multifaceted knowledge on packaging sustainability. PepsiCo and other industries such as Nestle, Tetra pack, Bosch Packaging Technology and others will be involved in the co-creation of the SumS material, as well as, experts from these companies will be invited at the face to face week of the SumS. We expect the trainees to be inspired by their real-life case studies and possibly initiate collaborations based on their start up ideas. We foresee REPACK in the coming years, to be looked at as a **model for a new paradigm of teaching and learning at the edge of sustainable packaging innovation**.

PARTNERS

030 - PepsiCo

047 - University of Turin

099 - University of Aarhus

An entrepreneurial perspective on Climate Friendly Food



2. EDUCATION

Year - 2020

Total cost of the project - 119.670 €

EIT Funding to UniTo - 38.500 €

Segment - **Studio programmes**

Activity leader - **Günzel-Jensen, AGI (Anders)**
| **University of Aarhus** |

UniTo's Role - **Partner**

Contact Person - **Remigio Berruto**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

The consortium will develop a summer school on Food Products Entrepreneurship and Process Innovation "An entrepreneurial perspective on Climate Friendly Healthy Convenient Food Solutions". Its ambition is to train groups of students, young researchers and professionals from different backgrounds, in creative thinking, **innovation in Climate Friendly Healthy Convenient Food Solutions and entrepreneurship**, with the final objective of translating innovative research solutions faster into real business cases.

The summer school will focus on tools and concepts for starting a new business in the sustainable food area, or creating new products within an existing company. The program utilizes the **flipped classroom** concept, where online learning is combined with in-class teaching. It combines a web platform with unique content, which has been tested and optimized by the University of Hohenheim and the University of Torino, in conjunction with researchers who work at the **highest level in food and sustainability research and related industrial partners**. This platform will further be enriched with the Aarhus University expertise on Convenient food and climate friendly diets. The in-class activities will involve food industries and will be set in a competitive environment to engage talented students. The program will be taught in 2020 at an exciting Food Ecosystem at Agro Food Park, a unique cluster for innovative companies and start-ups in the Food sector, at Aarhus University, DK.

ACTIVITY PURPOSE

Need

There is a trend towards fast and convenient food, which is often – but not necessarily – unhealthy and leads to high amounts of waste. It is accompanied by personal lifestyles that do not allow much time for the preparation and consumption of food. In Europe, revenue in the Convenience Food segment amounts to US\$60,641m in 2019. The market is expected to grow annually by 2.7% (CAGR 2019-2023). In the future the food industry has three "must win battles" that are: **understanding consumers, attracting talent and technology**. Entrepreneurship is particularly important in developing further and in a faster way the millennia's sustainable food systems. The European consumer is very diverse, and even more diverse are the food systems realities across Europe. Solutions need to be research based, to ensure sustainability of the investments, and strong economical outcomes.

Challenges

The food industry in the future, besides being innovative **need TALENTS**. In particular needs science talents that are equipped with a business mind-set and entrepreneurial skills, but also business managers that can understand the industrial processes and the consumers' perception.

Aim

The consortium has identified the aforementioned needs & challenges & foresees that with this unique in design program will deliver **tailor made training and skills** into a very diverse students audience. Based on partner's vast experience with summer schools (SumS), this project is structured to speak into two big categories of students:

- the ones that have a business background but want to elaborate their knowledge in Climate Friendly Healthy Food Solutions / Processing
- the ones that have a FOOD scientific background but lack the entrepreneurial soft skills.

Methodology

The program utilizes the **flipped classroom concept**, where online learning is combined with in-class teaching. Students, young researchers and professionals will be introduced first into the basics of creative thinking, innovation & entrepreneurship (Module A) and/or food technology (Module B), according to their needs. Still each one of them will have to pick 30 hours of online- learning. This approach can guarantee that all students at the in-class teaching will be in a position to follow the trainers & maximize their effective involvement during the interactive exercises. The teaching, will be presented by a mix of **researchers, sustainable food entrepreneurs, & industry professionals**.

The novelty of this summer school lies

- in the curriculum design that targets to address the specific educational needs of a multidisciplinary target group, eager to make a difference into the millenianns food industry market
- in the thematic content of the summers school, since no other similar exist to the best of this consortium knowledge.

Outcome

This SumS will produce 30 candidates that predictably, will have a higher chance for being **successful innovators** with an understanding for the need **for sustainable production**.

EXPECTED OUTCOMES AND IMPACT

The activity's main expected IMPACT is the education of new talents to adress the current and fututre market need but also the creation of innovative products and start-ups.

The activity will have impacts on several targets:

Trainees

Students, entrepreneurs will benefit from the SumS by receiving a high-quality training based on an innovative learning method, accompanied with in **class activities and training co-created with food industries** (Orkla, Danone, Mondelēz International, PepsiCo, Arla, Kraft Foods Group etc). Participants are then expected to be more willing to develop innovative food products or businesses.

Consortium

The consortium will develop a training based on **cutting-edge didactic approaches** (e-learning, flipped classroom, participant-centered-learning) for Climate Friendly Healthy Food Convenient Solutions. It will allow the consortium to expand its existing training offer and to become references in the field.

Food Industries

We are in contact with the aforementioned companies and they foresee to be benefited from the activity by having students/professionals not only technically prepared at the research and innovation level but also at the market, financing and IP level that implies incremental or radical innovation for a food product such us the gastro-convenience ones. Trainees will not only enhance their capability to start up ventures in the food industry, but they will also be able to initiate entrepreneurial projects within established corporations of the food sector. The **connection between science and business** reality will be emphasised in the class as four food industries (Orkla, Danone, PepsiCo, Arla) will be involved in the design phase and in the face-to-face activities of the SumS.

Outputs

- There will be handed out **3 prizes**, to the two best teams at the Sums.
- The consortium blended teaching approach will enable the program to be taught in other institutions in the future.
- A series of SumS on Enterpreneurship for Food Products and Innovation, with a different theme every 2 years.

PARTNERS

001 - EIT Food IVZW
045 - University Hohenheim
047 - University of Turin
099 - University of Aarhus

From Leaf to Root – holistic use of vegetables



2. EDUCATION

Year - 2020

Total cost of the project - 227.750 €

EIT Funding to UniTo - 57.000 €

Segment - **Studio programmes**

Activity leader - **Loeffler, ML (Myriam) | University Hohenheim I**

UniTo's Role - **Partner**

Contact Person - **Silvana Nicola**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

Many vegetables including sweet corn, artichokes, potato and cabbage (e.g. Brussels sprouts) are not holistically used in food production although they are safe to consume (without or with further processing). In some cases, more than 50% of the nutritional valuable material is left in the fields or not further valorized. This is due to several reasons including harvesting procedures having been designed for conventional products, consumer unawareness, and a lack of holistic product concepts. The idea of "From Leaf to Root" is that students will tackle these challenges by **developing prototypes based on plant parts** that are to date not or only very infrequently utilized, thereby promoting both a more **sustainable use of resources and healthier nutrition**. The multidisciplinary teams will work collaboratively with mentors from academia and industry on feasible food solutions (+ business case) while gaining a better understanding of the primary production sector.

ACTIVITY PURPOSE

The project "From Leaf to Root" aims to educate students coming from different academic backgrounds e.g. Food Science, Bioeconomy, and Agriculture, on how to develop feasible food product solutions to a given challenge taking sustainability- and safety aspects (e.g. food packaging), the consumer, the primary production sector as well as the underlying business concept into account. Therefore, the project enables students to gain knowledge along the whole food supply chain. In this project, multidisciplinary student teams will develop solutions to a (more) **holistic use of vegetables** (e.g. sweet corn, artichokes, potato, cabbage) thereby meeting both challenges – the consumer demand for healthier food and the demand for more sustainability when it comes to the utilization of resources, making this project highly relevant for the food industry.

While the focus of the project will be on the **development of new food products**, there are possibilities of translating developed approaches to other fields of application (e.g. pharma industry) thereby training the students to think creatively and indeed holistically about the challenge. Moreover, depending on the vegetable parts to be targeted, students may need to propose variations in harvesting methods. "From Leaf to Root" is hence an ideal challenge for a student team eager to transform their knowledge of the food system and primary sector into a business creation skill.

Through the build in academic-industrial mentorship and mobility experiences, students will gain a cross-institutional understanding leading to a strong knowledge-based network. Moreover, self-organization, the ability to take cultural diversity into account when working in multidisciplinary and international teams, as well as project management, are only few of the skills students will gain during the project preparing them for future challenges.

There are **five stages** to the project:

1. Recruitment and selection of teams in a **competitive process**
2. Kick-off event to prepare teams for the **product concept**- and business case development challenge
3. Product development phase with guidance in institutions combined with excursions to industrial partners
4. Show & Tell with competition and jury to present prototypes in the form of **business pitches**, with best teams to be awarded
5. During and after the project: Quality assessment of the project & implementation of a social media based **communication plan**.

Finally, highly innovative prototypes may have the potential to be considered for EIT Food innovation programs.

EXPECTED OUTCOMES AND IMPACT

The project "From Leaf to Root" aims to educate students on how to develop feasible **food product solutions taking sustainability and safety aspects** (e.g. food packaging), the consumer (consumer-centric approach; information & trust), the primary production sector and the underlying business concept into account. This activity aims at providing 30 future food- and bio-economy professionals with the required expertise to develop feasible solutions for the holistic use of vegetables.

The students who will participate in the "From Leaf to Root project" will

1. get a solid **understanding** about the **primary production sector** (harvesting methods and requirements),
2. learn to create **sustainable solutions** that are convenient for consumers and feasible for retailers
3. adsorb the model of challenge-based problem solving, as well as concept, prototype and business case development
4. develop **multidisciplinary and transdisciplinary** working skills by tackling the challenges in teams of 5 students having different socio-economic and scientific backgrounds.

While the focus of the project will be on the development of new food products, there are possibilities of translating developed approaches to other fields of application (e.g. pharma industry, packaging industry) which may lead to further education or innovation projects in 2021/22. Moreover, the project will aid an accelerated transition of the industry towards a circular bioeconomy by co-creating innovative solutions together with students, professionals, retailers and consumers leading to the development of a strong knowledge-based network.

PARTNERS

018 - Deutsches Institut für Lebensmitteltechnik

020 - Grupo AN

034 - Queen's University Belfast

045 - University Hohenheim

047 - University of Turin

079 - Vlevico

135 - Société des Produits Nestlé

550 - Agriculus

SUDAPS - Support for Dairy Production Sector in RIS Region



2. EDUCATION

Year - 2020

Total cost of the project - 70.000 €

EIT Funding to UniTo - 30.000 €

Segment - **Grow workshops**

Activity leader - **Bogacki, MB(Marek) | Institute of Animal Reproduction and Food Research (IARFR PAS) |**

UniTo's Role - **Partner**

Contact Person - **Martina Tarantola**

Department involved - **Veterinary Sciences**

PUBLIC ACTIVITY DESCRIPTION

The aim of our project is to support the regional development and to provide **solutions to sustainable dairy industry**, addressing farmers in dairy production, feed manufacturers, advisers, and employees in milk and dairy factories, as well as managers responsible for the **strategy and profitability of milk production in all RIS-eligible regions**.

The project seeks to highlight at the national and international level the current challenges, pathways and solutions related to this sector through knowledge transfer activities.

These will focus on the topics of: improvement of competitiveness by implementation of innovations, building a trend-driven entrepreneur culture, encouraging the use of available local resources, and sustainable management of post-production waste in milk by farming. **4 pilot SME workshops** will be held in Poland and Italy. The exact scope of the workshops will be based on the surveys of needs and challenges conducted among the target SMEs operating on the market. Qualified specialists from partner institutions will be involved to share best practices, latest scientific evidence, and market-driven experiences.

ACTIVITY PURPOSE

The main objective of the pilot SUDAPS workshops for SMEs is to transfer knowledge on innovative processes applied in sustainable milk productions in dairy industry. Current problems, challenges of dairy farming will be identified by the surveys of needs and challenges directed to the farmers and their associates on local markets. The next step will include identifying the trends on the consumer market in terms of new milk products, search for gaps in the market and application of innovative solutions that will create competitiveness. Based on the surveys, the detailed topical content of the workshops will be developed. 4 SME workshops will be organized in RIS regions of Italy and Poland. The proposed outline of the workshops will cover the following issues:

- **Dairy cow health** and welfare/management of high yielding dairy cows
- Dairy cows **profitability of reproduction** management
- Management of reproduction/Effect of transition period and postpartum disease on production and reproduction;
- Feeding and milking process optimization, Dairy nutrition to **improve the lipid fraction of milk and derived food** products
- Dairy nutrition to **promote environmental sustainability**
- Application of **environmentally friendly solution** in dairy production.

Invited speakers will be selected from partnering countries and they will share their expertise in the RIS region, especially in an area of innovative solutions, cutting-edge scientific technologies and research results. The impacts to be achieved after the workshops for SMEs include:

- Raising **awareness on sustainable milk production**
- Improving **knowledge transfer** to SMEs
- Increased **competitiveness** of SMEs
- Improving **communication between dairy farmers**, milk industry and academia
- Increasing the use of scientific achievements and innovations in the dairy industry
- Stimulating academia to address challenges that derive directly from the dairy production sector.

EXPECTED OUTCOMES AND IMPACT

Two workshops entitled SUDAPS -Support for Dairy Production Sector in RIS Regions - organized as pilot activities in the RIS regions of Poland and Italy will have the following impacts:

- Identification of knowledge gaps in the area of dairy production and animal reproduction in targeted RIS regions;
- Strengthening the knowledge transfer and continuing education of participants from European dairy sector.
- Promotion of a **sustainable development in milk production and processing**, including pro-ecological solutions and animal welfare.
- Supporting **cross-talks** between milk producers, representatives of SMEs in the dairy sector and academia to identify mutual needs and potential solutions based local conditions and realities.
- **Maximising the impact of research and innovation** in the European dairy sector.
- Defining the consumer and market trends, and promoting the trend-driven actions to create products that increase competitiveness of SMEs.

The SUDAPS will be organized by research partners from **Poland and Italy**, representing regions marked by the prevalence of dairy production SMEs. The participants will be recruited from among the dairy milk producers, advisers, reps. of dairy processing sector responsible for the strategy and profitability in SMEs of dairy industry. Pilot workshops will benefit stakeholders from RIS regions of Poland and Italy, enabling them to reduce the innovation distance to other European regions, and achieve sustainable development while maintaining local conditions and realities. The project follows the EIT Food RIS strategy objectives:-RIS-SO3 Promote the **convergence of stakeholder networks in EIT RIS area** and other European countries, linking regions of Europe with diversified innovative potential and stimulating cooperation between the existing and upcoming innovation leaders, and -RIS SO5 Catalyze entrepreneurship and innovation across the food system in EIT RIS countries, with particular focus on (...) national developments.

PARTNERS

032 - Institute of Animal Reproduction and Food Research

047 - University of Turin

057 - CLC North-East

061 - CLC South

The human miocrobe

Year - 2020

Total cost of the project - 67.869 €

EIT Funding to UniTo - 35.000 €

PUBLIC ACTIVITY DESCRIPTION

A massive on line open course will be designed and deliver in year 2020 focusing on the **human microbiome and its impact on human health**. One of the main focus will be the food-health axis through the mediation of the gut microbiome, and how the latter can affect other microbiomes hosted in the human body. The consortium is composed by experts in different disciplines such as food scientists, food microbiologists, nutritionists and medical doctors and such transdisciplinarity will assure that the content of the MOOC will represent a unique opportunity for the citizen/consumer to understand better the ecology and function inside us.

Videos, discussions and interactive materials will be developed in a way they will be promptly acquired by the learners ensuring their engagement right from the beginning of the MOOC.

After a first module on the introduction of the human microbiome, a series of tasks will follow focusing on different subjects, such as (non inclusive list): **modulation of gut microbiome by diet**, the **brain-gut axis**, **gut microbiome** and non communicable diseases, and **influence** of the gut microbiome **on the other human microbiomes** (such as skin microbiome).

ACTIVITY PURPOSE

Microbiomes are defined as the microbial populations present in a specific ecosystem in a certain moment in time and their spectrum of activity. This definition underlines how microbiomes have a primary role in shaping the behavior of an environment and impact its characteristics. This MOOC, on human microbiome, will be developed taking into consideration the most important developments and the available scientific knowledge regarding the **interactions between microbes and the human body**.

We, as human beings, host an incredible number of microorganisms which count higher than all the human cells altogether. It can be considered for this reason as a super-host, in fact several parts of the body result to be colonized by different microorganisms.

All the **gasto-intestinal tract** presents microorganisms from the stomach to the colon, but also the **respiratory tract** is characterized by several species of microorganisms. The **skin** is another important part of the human body where microorganisms are present in very high number. The type of microorganisms colonizing niches in the human body depends on the characteristics of the specific district, for example moist and dry compartments will facilitate the development of different microbes. The intestinal tract has attracted in the last 10 years the attention of several scientists and has become a hot spot for ecological investigation.

The intestinal microbiota is dynamic and it changes throughout the life. Factors such as formula and human milk determine the development of the intestinal microbiota in babies and events such as the introduction of solid foods in the diet of the baby induce a modification of the ecosystem. Other changes, although more contained, occur from toddler to adult and in the elderlies. Its relevance come also from the fact that one gram of feces can contain up to 1 trillion microbial cells.

Due to its relevance to human health, this MOOC aims at informing and educating the citizen/consumer on its importance and how changes in its composition and functions can result in health risks. We will design a fascinating journey into the human body, down to the gut, where the **ecology and roles of the human microbiome** will be narrated. The link between food and health, modulated by the gut microbiome, and the gut-brain axis will be also included in the MOOC.



2. EDUCATION

Segment - **Engage programmes**

Activity leader - **Cocolin, LC(Luca) | University of Turin (UniTo) |**

UniTo's Role - **Coordinator**

Contact Person - **Luca Cocolin**

Department involved - **Agricultural, Forest and Food Sciences**

EXPECTED OUTCOMES AND IMPACT

The expected outcome of this proposal is the production and delivery of a new EIT Food MOOC focusing on the human microbiome, which will have an impact on society through the education of the consumers on subjects that are related to the **link between food and health and are mediated by the human microbiome**.

Consumers have become more and more aware of the importance of diet and its impact on their health, however the importance of the human microbiome is not always taken into consideration (in particular, the role of the gut microbiome).

Humans can be considered to be superhosts and contain in several districts of the body, well-structured ecosystems, whose balance is essential for a healthy status. For example, the gut, which is a crucial environment in which a huge number of microorganisms co-exist, interacting and transforming what is ingested through the diet, into key compounds that are essential for human well-being.

Recently human microbiome has become the center of attention for many researchers in different fields of science, ranging from medicine, nutrition and food science, representing a topic of investigation where a strong multi-disciplinary approach is needed.

In this scenario the consumer is exposed to what the media is filtering, and the messages that come through are not always uniform and clear.

For this reason, we thought that it would be beneficial and timely to produce a **MOOC on human microbiome**, which will contain simple and easy to understand concepts related to what it is, how it affects us and especially **how food and diet can modulate it and impact on our health**. The MOOC aims at enrolling 3000 participants in the first delivery of the course. The offer will open in October 2020 and by the end of the year the target will be reached.

PARTNERS

- 011 - CSIC
- 046 - University of Reading
- 047 - University of Turin
- 053 - Quadram Institute Bioscience
- 525 - Microbion

Consumer's and Environmental Safety: Food Packaging and Kitchenware



2. EDUCATION

Year - 2020

Total cost of the project - 64.996 €

EIT Funding to UniTo - 39.227 €

Segment - **Engage programmes**

Activity leader - **Merlo, R (Giorgio) | University of Turin (UniTo) |**

UniTo's Role - **Coordinator**

Contact Person - **Giorgio Merlo**

Department involved - **Molecular Biotechnology and Health Sciences**

PUBLIC ACTIVITY DESCRIPTION

We propose a course in the general field of food safety, intended for a general audience, consumers' associations, and all interested subjects and groups. The course aims to build knowledge and raise **awareness on chemical contaminants potentially present in food and drinks**, derived from food-contact material, and their impact on consumers' health and on the environment. A new field of nutritional health and medicinal chemistry is addressing the possibility that long-term exposure to very low doses of food-contact substances may have relevant endocrine-like activities that may interfere with the thyroid and sex hormones, and on the control of appetite and bodyweight.

The course will illustrate the current knowledge on these issues, the cellular and biological test assays and the search and **testing of new and safer materials**. Finally, the course will mention possible scenario for the near future. Emphasis will be placed on acknowledging all point of views, considering that safety should be addressed and designed as a system.

In addition to a general audience, the course will also be of interest for students in chemistry and biology, as well as for personnel of the food manufacturing, conservation and distribution industry.

ACTIVITY PURPOSE

The course will address :

1. The migration from food packaging / kitchenware into food - the compounds and the detection methods
2. Past concerns: toxic chemicals, metals, etc. Acceptable daily intake vs. effects.
3. New concerns for consumer's safety: **long-term endocrine disrupting (ED) effects**.
4. Biological **methods to reveal ED** activity – cell cultures, biomonitoring
5. Towards **innovative materials** – protect consumer's health and the environment

The Partnership:

- University of Turin, lead partner, coordination, content provider, assembling and distributing the finalized material on Future Learn (Drs. Claudio Medana, Giorgio Merlo, Patrizia Bovolin)
- Inst. Animal Reproduction and Food Research, Polish Acad. of Sciences, content provider (Drs Tomasz Jelinski, Michal Janiak, Jan Czerniecki, Michał Wróbel, Małgorzata Starowicz)
- Inst. Agroquímica y Tecnología de Alimentos CSIC, content provider (Dr. Amparo Lopez Rubio)
- TellSpec, industry, general reviewer (Dr. Isabel Hoffmann)

The main activity consists in the design, production and distribution of a **set of educational modules**, in which short videos are accompanied by social learning activities, such as further reading, searches, self-evaluation tests, discussions, etc. The modules are enriched with additional material for further exploration (articles, reviews, links). All partners will contribute raw content material (including links, videos, slides, images, links..) and will be engaged in the planning of the course and the storyboard. UniTo will organize, assemble and format the raw material into effective modules, with the valuable support of SIPE - the Media Service/E learning team at UniTo. The content and organization will be review by TellSpec. The course will be free to a general audience and can be reused.

Of interest for consumers and their associations:

We aim to set the knowledge basis for a near future in which compounds with demonstrated **ED effects** will be strictly **regulated**, to open the way to novel and safer materials. Consumers will be trained to recognize and value scientific evidence over emotional beliefs, to examine of all point of views, and to grow resistance against disinformation and fake news. In turn, this should promote a **pro-active approach** to face and address the societal concern about food and health.

Of interest for students, professionals, personnel of food industry

We aim to promote dialogue between companies, analysis labs, research labs, investigators, endocrinologists, nutritionists, about the chemistry of molecules migrating from food-contact materials that may have endocrine disrupting activity and their mode of action. Specific scopes are to: a) illustrate current analytical and biological tests, b) promote interest and research on new safer materials, c) promote a "safety-by-design" system approach among stakeholders, in which each subject plays an integrated role to safeguard consumers' health.

EXPECTED OUTCOMES AND IMPACT

Prevention is better than cure; aware citizens are an excellent stimulus to promote scientific research and foster socio-economical evaluations, political and regulatory intervention, and ultimately industrial conversion. With this MOOC we aim to illustrate a set of issues and topics going in the direction of comprehending and addressing chemicals and EDs migrating into food/drinks from contact material, including chemical analyses, biotests, the impact on human health and on the preservation of the environment, search for novel materials, current EU regulations. The course will illustrate the current knowledge, the chemical, cellular and biological assays, and likely scenarios for the near future.

Main target audience : the general public

We aim to raise knowledge, interest and awareness within consumers and their associations about the issues of migrating compounds – with attention to the tolerated dose-response paradigm.

We want to raise awareness of the potential health risks, in particular endocrine and metabolic health, due to migrating compounds and the **benefits derived from using alternative bio-based packages** for human health and for the environment. We also aim to stimulate discussion on these issues, hoping to indirectly promote dissemination. We also aim to re-affirm the importance of scientific results and accurate testing, thus stimulating evidence-based discussion on these issues. This will contribute to raise informed and conscientious citizens with increased trust in science, will promote **dissemination of facts against disinformation**, and prevent spreading of fake news. We expect a positive impact on citizens' ability to adopt health choices in everyday life and engage in pro-active societal engagements. Women and families are a privileged target, and we expect a further impact in terms of:

- spreading healthy habits to close relatives and younger ones
- spread the acquire knowledge and method in schools, engaging also teachers and educators.

Potential additional outcomes :

- stimulate research on **new methods for migration testing** and on new materials
- drive the interest of professionals to dedicate time / equipment to research on ED
- create an EU network of stakeholders that profit from **dialogue on the impact of ED**
- mprove environmental protection from the impact of ED
- stimulate profitable dialogue between those involved in dissemination and decision making (journalists, administrators, politicians).

PARTNERS

011 - CSIC

032 - Institute of Animal Reproduction and Food Research

047 - University of Turin

537 - TellSpec

Online courses Re-runs

Year - 2020

Total cost of the project - 30.000 €

EIT Funding to UniTo - 10.000 €

PUBLIC ACTIVITY DESCRIPTION

Under the 2018 KAVAs, online courses allowed us to reach 16,000+ learners, thanks to Activity Leaders hard work on developing high quality course material. From learners' responses it is clear that the courses have created excellent assets that should remain current in our portfolio - hence why it is essential to provide additional resources to online course team to **ensure re-runs of the succesful online course developed under BP19**.

Generally speaking all courses developed under previous business plans are expected to re-runs at least 3 times over a period of 2 or 3 years. An analysis of each course performance is made after each course run, and decision is made to continue running session of the course or to archive it. A course may be archived for the following reasons:

- the course is not fit for the market anymore
- 3 consecutives runs of the course with negative feedbacks from learners.

ACTIVITY PURPOSE

The Management Board has decided to grant a maximum budget of 10,000 EUR, including indirect costs for the re-runs of selected online courses

All the **MOOCs developed as part of BP18 are still included in the EIT Food online course portfolio**. The courses are : *Trust in Our Food: Understanding Food Supply Systems; Farm to Fork: Sustainable Food Production in a Changing Environment; Food for Thought: The Relationship Between Food, Gut and Brain; and Superfoods: Myths and Truths.*

The aforementioned courses developed as part of BP18 received additional **funding as part of BP19 to perform a maintenance of the course** after the first run. Each of the courses developed under BP18 received an additional 10k EUR to review the course based on learner feedback extracted from both the end of course surveys and the weekly sentiments. The following actions were included in the course maintenance : proofreading, check for broken links, blank word exercise to be turned to quizzes, video re-shooting, video replacement by articles as well as an update of the course marketing material. A proportion of the extra funding was also be dedicated to **automate the course** as much as possible, so that re-runs could be manage with no or very little facilitation. For instance, for the second run of each course EIT Food requested course team to publish a FAQ document at the end of each course week (ideally in a video format or text document) that could be accessible by future learners in future runs. Also, as an alternative to Educators facilitating the course, EIT Food encouraged course teams to offer mentoring opportunity to PhD students to monitor the course. Their roles was to guide, encourage and where necessary re-direct conversations.

In 2020, EIT Food would like to repeat the activity with the course being developed as part BP19. These courses are : *Explore How Farmers Produce Food Sustainably; Improving Food Production with Agricultural Technology and Plant Biotechnology; Exploring Controversies in the Food System; Science Communication and Public Engagement; Explore How Farmers Produce Food Sustainably; How is Food Made? Understanding Processed Food; Animal Feed Production: Feed Quality; Animal Feed Production: Feed Safety; and Understanding Meditarrean and Okinawa diets.*



2. EDUCATION

Segment - **Engage programmes**

Activity leader - **Vivien Bodereau | EIT Food|**

UniTo's Role - **Partner**

Contact Person - **Luca Cocolin**

Department involved - **Agricultural, Forest and Food Sciences**

Once the courses' runs will be completed, an analysis on each course performance will be made. The courses reaching the more learners will receive priority for additional funding (the 3 "best-sellers"). Depending on the performance of the course, and the need for revision/improvement, a funding decision will be made on an ad'hoc basis.

The courses developed as part of BP18, and revised as part of BP19 will also be **included in KAVA 20213**, but no additional budget will be allocated to these courses. These courses will be added to the KAVA so that we could record the number of learner in KPI KICE04.

EXPECTED OUTCOMES AND IMPACT

While the percentage of online learning possibilities is rising, online learning environments can seem quite intimidating for learners who have not had a chance to try them yet. It presents new challenges beyond those of a traditional classroom because many learners are unfamiliar with the online learning environment, which may include unfamiliar technology, isolation from instructors and university staff, time-management, and a lack of face-to-face interaction with other learners. However, online courses can be attractive to some learners because **they offer flexibility**, particularly for those with demanding professional or personal responsibilities. As online course publisher, it is essential that EIT Food gives additional attention to strategies that will keep our learners engaged, creates a **successful learning environment**, and provides a **rewarding learning experience** where learners feel supported, valued, and connected. MOOCs are courses aiming to inform citizens and consumers by providing a variety of online resources for free. MOOCs seek to capitalise on a high volume of learners by encouraging peer learning in place of a more conventional learning in academic institution.

EIT Food online courses are hosted on **FutureLearn**, a platform where users learn together, and learn with experts. Every year, EIT Food publish encourage its partners to develop new online courses on subject that are aligned with EIT Food strategic objectives, and that address a gap in its portfolio. In 2018, EIT Food facilitated the development of 5 MOOCs on FutureLearn. The courses reached 16k+ learners. In 2019, EIT Food would like to reach even more learners and provide access to online education worldwide on a larger scale, thanks to the design of new courses, and the re-runs of the ones developed in 2018. The 2020 strategy will see courses running every quarter of the year, with popular ones running frequently and new ones being designed based on proposals approved by external evaluators.

Ultimately, EIT Food aims to provide reliable and transparent information to the public worldwide, with the idea that better informed citizens will make healthier and more sustainable food choices. EIT Food has the ambition to transform education and use **online courses as a part of a market shift towards digital higher education**.

PARTNERS

001 - EIT Food IVZW
047 - University of Turin
059 - CLC North-West

An introduction to Food Science

Year - 2020

Total cost of the project - 65.000 €

EIT Funding to UniTo - 12.000 €

PUBLIC ACTIVITY DESCRIPTION

The integrity of food is of increasing consumer concern due to a number of highly publicised food authenticity and contamination scares. In addition, there is currently 3.5 billion people suffering from malnutrition, whilst the worldwide numbers of overweight (approx. 2 billion) and obese (over 500 million) people is growing. This MOOC is designed to address these concerns; create an **awareness and understanding of the food system among consumers**; and empower citizens to make safe, healthy and sustainable food choices.

The course will cover topics including: food contaminants; control of food safety; ethical issues and sustainability considerations; and consumer information and responsibilities. The aim of the course is to **help consumers to become responsible partners in the food system**, overcome their concerns and create trust in food production; spark a new generation of informed consumers; and showcase the vast number of opportunities which exist within the food sector.

ACTIVITY PURPOSE

The Introduction to Food Science MOOC aims to educate and engage consumers and the food sector on the food system; improve their knowledge and appreciation of food; empower them to become active change agents towards an inclusive, transparent and trusted food system; and attract talented and enterprising people into the food system. The MOOC will explore food contaminants, control systems and governance in the food system; ethical and sustainable considerations; and consumer responsibilities.

The MOOC will be delivered over four week, with a new topic introduced each weeks. The course will cover the following **four topics**:

1. **Macro and Micronutrients**
2. **Food Safety** (Biological, chemical and physical hazards)
3. **Ethical and Sustainability** Considerations in the food System
4. **The role of the consumer** in making safe, health and sustainable food choices

The unique attribute of this MOOC is its ability to attract interest from learners worldwide. In particular, the course will be targeted towards **16-18 year old EU citizens** who are currently studying a food related subject at level 3. The purpose of the MOOC is to provide extra reading which supports their learning and to showcase the opportunities within the sector and encourage them to undertake food related degrees as they start to consider their future career pathway.

MOOCs allow **unlimited participation and open access** via the web so it is expected that there will be wider participation beyond the target audience and this will help to spark a new generation of informed citizens. The partners involved are from leading organisations, including Queens University, Belfast, University of Turin, University of Madrid, University of Aarhus and CSIC. The involvement of multi-discipline experts from these organisations will ensure learners are provided with evidence-informed and reliable information in an understandable format.



2. EDUCATION

Segment - **Engage programmes**

Activity leader - **Fox, M (Michaela) | Queen's University Belfast |**

UniTo's Role - **Partner**

Contact Person - **Egidio Dansero**

Department involved - **Cultures, Politics, Society**

As a result, learners should increase the value they place on our food system and become empowered to self-manage their **consumption** in a **healthy and resource-efficient** way. Moreover, the integration of rising starts and industrial partners as case studies will illustrate the measures underway in food security and showcase the career pathways which exist within the food sector. The MOOC also gives the opportunity to monitor the learning behaviour of registered users and to collect data about socio-economic and demographic characteristics. This data, appropriately anonymized, will be useful for improving the design of the course and for reaching a better understanding of the uses and impact of the MOOC for learners.

EXPECTED OUTCOMES AND IMPACT

By the end of the course, learners should be able to:

- **Understand how food can become contaminated** by biological, chemical or physical hazards
- Demonstrate knowledge and understanding of food contaminants and food safety
- Outline how the **consumer** is **protected by legislation**
- Gain an awareness of the work organisations are doing in relation to food safety e.g. EFSA
- Explore ethical and sustainability issues surrounding food production
- Understand the role of the consumer in ensuring food safety and becoming change agents in the transition towards a **smart, inclusive and trusted food system**.

PARTNERS

- 006 - Universidad Autónoma de Madrid*
- 011 - CSIC*
- 034 - Queen's University Belfast*
- 047 - University of Turin*
- 099 - University of Aarhus*

Circular Business Models for Sustainable Urban Food Systems



2. EDUCATION

Year - 2020

Total cost of the project - 340.000 €

EIT Funding to UniTo - 33.125 €

Segment - **Engage programmes**

Activity leader - **Bodereau, V (Vivien) | EIT Food |**

UniTo's Role - **Coordinator**

Contact Person - **Paola De Bernardi**

Department involved - **Management**

PUBLIC ACTIVITY DESCRIPTION

The purpose of the MOOC on Circular Business Models for Sustainable Urban Food Systems is to **share knowledge** about the need of new, **innovative and circular business models** in order to educate and represent the journey to the circular transition. Specifically, the context are the Urban Food Systems. Why?

Because the city eats. It eats food, but it also consumes the land and other resources needed to produce and deliver it.

The flows created by an urban settlement in relation to its food requirements are very intense, important and of course inevitable. Thus, we need to involve all the urban food ecosystem stakeholders as well as urban communities to co-create and co-share new knowledge on Food circularity usable and spreadable for free in a massive way through the tool of a

MOOC on the platform **Future Learn by EIT Food**.

The content

We have now entered the "Urban Age" when over 50% of the global population live in cities. This is unprecedented in human history and will generate significant social, environmental, technological and economic challenges. It is estimated that by the year 2050, there will be approximately 9 billion people living on Earth. This increase in the global population is projected to pave the way for a global economy that will require about three times more resources than people currently use. In the traditionally adopted linear economies, approximately 80% of materials humans use are directly discarded after usage, clearly highlighting the fundamental need for an alternative to the linear "take, make, and dispose" model of production.

The circular economy is "the number one priority" for the European Green Deal of incoming EU Commission President Ursula von der Leyen (European Union, 2019). Moreover, "circularity", including new waste and recycling laws, will represent "half" of the EU's effort to achieve net-zero carbon emissions by 2050. Urban Food Circular business models applied to the way we produce and manage food resources could tackle these challenges, designing out waste and keeping materials in use, coupled with the expansion of regenerative agriculture practices. Generally, the transition from linear to circular economic models encompasses 4 fundamental building blocks:

1. Material and product design 2. New Business Models 3. Global Reverse Networks 4. Enabling Conditions.

The approach

The need for an eco-systemic transition led by a "holistic view" and "multi-stakeholder approach" on climate and urban circular strategies is supported by food companies but also by public institutions and civil society to adopt new circular business models, warning they risk going out of sustainable future opportunities for humans and the planet. Since Food is part of our cultural identity and social interactions, and essentially necessary for human survival and biodiversity preservation, we need new ways to "manage" the Urban Food Ecosystem involving all the actors, not only of the food value chain but also from important side streams. "We need to re-imagine and re-new the food systems: let's stop thinking it as a Food Chain: from the seed to the table... We have to move from Food Chain to Food Stack (cit. Ofra Strauss, FoodTechIL speech, <https://www.youtube.com/watch?v=UmMcwibUUEQ>).

ACTIVITY PURPOSE

The circular economy is "the number one priority" for the European Green Deal of incoming EU Commission President Ursula von der Leyen (European Union, 2019 Source: EC - Audiovisual Service). Moreover, "circularity", including new waste and recycling laws, will represent "half" of the EU's effort to **achieve net-zero carbon emissions** by 2050. Using circular business models applied to the way we produce and manage food resources could reduce emissions by 49% or 5.6 billion tonnes CO₂e in 2050. This challenge is driven by business models that design out waste and keep materials in use, coupled with the expansion of regenerative agriculture practices. The need of a Food systemic transition led by a "holistic view" and "multi-stakeholder approach" on climate and urban circular strategies is still urged food companies and all the stakeholders of food and other side stream involved, to adopt **new circular business models**.

EXPECTED OUTCOMES AND IMPACT

The need for a systemic transition, led by a "holistic view" and "multi-stakeholder approach" on climate and urban circular strategies, needs support by public organization, no-profit institutions and food companies. These need to adopt new circular business models, as they otherwise risk to perpetuate the current linear system where a third of all food produced globally – worth USD 1 trillion – is thrown away each year. This represents a huge loss of nutrients and a major cause of environmental issues (incl. carbon and water footprint). Yet, still, 10% of the global population continues to go hungry. The main impact is to reverse the trend giving design to Food circularity in Urban areas. To make citizens, policy makers and food businesses aware is an excellent stimulus to promote scientific research and foster socio-economical evaluations, political and regulatory intervention, and ultimately transform the urban Food system with a collaborative approach. With this **MOOC** we aim to illustrate a set of issues and topics going in the direction of comprehending and **addressing the Food Urban Circularity strategy** by changing the way urban systems are planned, designed, and financed, and how they are made, used, and repurposed. This vision aligns with the 2030 Sustainable Development Goals, including reducing greenhouse gas emissions and adapting to the effects of climate change. The course will illustrate the current state of knowledge, and will map innovative business models based on circular economy and zero-waste thinking, demonstrating how technological and societal innovation in urban Agri-Food Systems can have a positive impact on society and economy, by applying novel resource-efficient agri-food techniques in urban and peri-urban areas. In order to achieve its objectives, the MOOC "**Circular Business Models for Sustainable Urban Food Systems**" brings together a multi-disciplinary Consortium of partners, developing innovative approaches for social engagement and empowerment investigating the economic, environmental and social benefits of circular urban Food System and likely scenarios for the near future.

Main target audience : citizens

We aim to **raise knowledge, interest and awareness** within citizens (not only as consumers) and their associations about the issues of a paradigmatic change in urban food systems, desirable because nature and the health of humankind are considered at risk. All the **stakeholders** of the **global Food ecosystem**, each for its part, are concerned. A collective sense of responsibility, which also individual business and public institutions cannot ignore, is emerging.

We want to raise awareness to all people as citizens, whatever the role they play in society, first of all that the wave of circular business models concerns essentially the visible part of these complex, natural or social systems, that is material elements.

Later on, step by step, intangible assets like knowledge, capabilities, time and ethical values will have been integrated into urban circular management models. We expect that urban food circularity will be a key concept of modern management and a **pathway to sustainable development**. We also aim to stimulate discussion on these issues, hoping to indirectly promote dissemination. We also aim to re-affirm the importance of transparent scientific results and accurate testing, thus stimulating evidence-based discussion on these issues. This will contribute to raise informed and conscientious citizens with increased trust in new way of production and consumption, promoting dissemination of facts against disinformation. We expect a positive impact on citizens' ability to adopt health choices in everyday life and engage in pro-active societal engagements. Millennials as a new sustainable generation and as a novel workforce together with their communities are a privileged target, and we expect a further impact in terms of: a) spreading **healthy lifestyle habits** to close relatives and younger ones; b) spreading the acquisition of **knowledge and methods** in schools and university, engaging also teachers and educators with their powerful support on disseminating good practices on next generation Z and X (our future).

Potential additional outcomes :

- In line with the principles of Responsible Research and Innovation (RRI), our MOOC shall support **urban participatory policy processes** that convene a wide variety of public and private stakeholders throughout the whole food system. These shall include, for instance: food producers, processors, retailers, procurers, food service industry, nutritionists, universities, SMEs and local/regional business, educators, behavioural and social scientists, professional associations, innovative ICT companies, venture capitalists NGOs, media and citizens and taken into account gender aspects.
- stimulate **research on new methods**, business models and food ecosystem policies enhancing the resilience of cities against climate change and urbanization by enabling a Food smart society
- drive the interest of professionals/business leader to dedicate time and effort to research on **Circular Business Models for Sustainable Urban Food Systems**
- create an **EU network** of urban stakeholders that profit from dialogue on the impact of Circular Business Models for Sustainable Urban Food Systems
- improve environmental protection from the impact of project
- stimulate **profitable dialogue** between those involved in dissemination and decision making (journalists, administrators, politicians)

PARTNERS

044 - University of Helsinki

047 - University of Turin

550 - Agricolas

SME Workshop: Supporting SMEs for new business opportunities



2. EDUCATION

Year - 2019

Total cost of the project - 90.630 €

EIT Funding to UniTo - 11.205 €

Segment - **Professional Education**

Activity leader - **Braun, SB (Susanne) | University Hohenheim |**

UniTo's Role - **Partner**

Contact Person - **Patrizia Busato**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

The main objectives of the SME workshops are an innovation process around “sustainable food production” to identify challenges and solutions in an accelerated innovation process building on the experiences of a previous project. The first step is a creative problem-solving process to identify the **challenges and needs of SMEs related to sustainable food production in Europe**.

The second step will identify trends as growth opportunities and apply the new knowledge to **create innovative solutions**, discover niche markets, promote innovation ecosystems (networks), and improve competitiveness. In the final step, “knowledge transfer”, 6 SME workshops will be held in Germany, Spain, Poland, UK, Finland and Italy. Lectures are combined with creative activities that yield the intended outcome and match the objectives: to create new business opportunities for food SMEs in an inspiring, stimulating and accelerated way. Additionally, job brokerage for students will be included.

ACTIVITY PURPOSE

A trend-driven innovation process around “sustainable food production” will be developed to support European food SMEs. First, partners will match the identified needs of SMEs with emerging trends. Second, education workshops will be held to transfer this knowledge for the creation of novel solutions and new business opportunities, improved competitiveness and innovation networks to foster a **more entrepreneurial-driven culture in EU food producers** matching the EIT Food's strategic objectives.

EXPECTED OUTCOMES AND IMPACT

6 SME Workshops “Supporting SMEs for new business opportunities” will be held in Germany, Spain, Poland, UK, Italy, and Finland during 2019 with the main impacts, in short- and long-term, being as follows:

- The improvement of **knowledge transfer and education of SMEs in the food sector**
- The improvement and stimulation of **dialogue between SMEs, food-related industry, academia** (research organisations/Universities), and students
- The **enhancement of sustainability of the European food sector** (technical innovation for sustainable food production, food waste reduction and opportunities, alternative uses of side-streams)
- The presentation of **new business opportunities for food SMEs** improving competitiveness and entrepreneurial skills, building a trend-driven culture, and promoting the creation of start-ups.
- The **maximization of the impact of research and innovation** related to the food sector in Europe
- The stimulation of SMEs and stakeholders engagement/collaboration through European networks
- The **enhancement of employment in the European food sector**, especially for young people.

UHOH, lead partner, was the coordinator of EU project TRAF00N (Traditional Food Network to Improve the Transfer of Knowledge for Innovation, 2013-2016). Within TRAF00N, more than 55 training workshops for food-producing SMEs were held in Europe. Many TRAF00N materials (e.g. questionnaires to identify SME needs, results), as well as the TRAF00N Network, will be used for the implementation of this EIT Food educational activity. Also, UHOH will contribute with its experience in the EU H2020 Project 'SMARTCHAIN' where a substantial involvement of small food producers also is a key element for creating new products and gaining/maintaining competitiveness in the respective sectors.

PARTNERS

007 - AZTI
032 - Institute of Animal Reproduction and Food Research
034 - Queen's University Belfast
045 - University Hohenheim
047 - University of Turin
050 - VTT Technical Research Centre of Finland
061 - CLC South

How to effectively change food habits: innovative techniques and personalized nutrition approaches



2. EDUCATION

Year - 2019

Total cost of the project - 132.874 €

EIT Funding to UniTo - 34.299 €

Segment - **Professional Education**

Activity leader - **Sacco, KS (Katuscia) | University of Turin (UniTo) |**

UniTo's Role - **Coordinator**

Contact Person - **Katuscia Sacco**

Department involved - **Psychology**

PUBLIC ACTIVITY DESCRIPTION

Our project targets professionals in the health and fitness sectors that routinely deliver interventions to change the eating habits of their clients. The aim is to provide them with innovative techniques and **personalized nutrition approaches**, able to obtain effective and measurable changes in their clients' behavior. Also, they will improve their ability to deliver scientific knowledge to their clients and to steer them towards healthier diets. We will adopt an approach that combines **online learning, reflective practice** and **interactive workshops**, which will be held in Italy, Spain, Germany, and England.

ACTIVITY PURPOSE

This course will provide professionals with **innovative techniques and personalized nutrition approaches**, able to obtain effective and measurable changes in their clients' diet. The students (e.g., wellness coaches, nutritionists/biologists or psychologists) will get scientifically reliable and updated knowledge, interactive workshops, feedback on their reflective practice and workplace-based learning. A specific module will increase their ability to communicate with non scientists.

EXPECTED OUTCOMES AND IMPACT

This activity will impact the society at large by providing trustable knowledge, continuous education and professional development to the wide range of health professionals, holistic coaches and nutritionists medical, social and psychological professionals whose work includes **nutrition coaching, dietary advice** or guidance and who **deal with food choices** and **food-related illnesses**.

There is an ever increasing number of non-dieticians that seek to enter the market of food coaching/dietary advice: targeting them will allow us to target the society at large.

We expect to have a **direct impact on the students** that will successfully complete our course. They will learn about the application of latest technologies in nutritional science, the development of precision nutrition and how this approach can have an impact on their everyday practice. Topics will also include cognitive and social mechanisms that act as barriers to dietary change and techniques to overcome them, taught with an interdisciplinary outlook and with the goal of providing actionable advice.

Most importantly, the impact of this initiative will be much greater than just the number of **students** enrolled, as each one of them **will interact in the next few years with hundreds of new customers/patients**. This activity will, therefore, affect swathes of society by educating professionals, improving the health of the population and, increasing its food literacy.

This course will also provide to the organizers the opportunity to develop, replicate and validate innovative teaching methods, and to compare the experience obtained by their implementation in different countries.

The target values of KICE04 are based on a conservative scenario: a workshop held in 2019 by each partner plus online-only learning module; 2/3 workshops in 2020 and in 2021 plus reruns of the online modules.

PARTNERS

006 - Universidad Autónoma de Madrid

020 - Grupo AN

045 - University Hohenheim

046 - University of Reading

047 - University of Turin

504 - BeYou

Focus on farmers

Year - 2019

Total cost of the project - 335.486 €

EIT Funding to UniTo - 19.250 €

PUBLIC ACTIVITY DESCRIPTION

Agricultural technologies and innovations offer significant opportunities to **improve** the **efficiency and effectiveness of farm businesses**, through optimised yields, reduced environmental impact and increased profitability. However, farmer adoption of these technologies is often limited and therefore the benefits are not realised.

This project builds on the 2018 EIT-Food Educating for Technology Take-off (ETTO) project. The 2019 project will include the unique **recruitment of farmer champions and technology ambassadors** (including stakeholders giving consultancy to farmers) who will be trained in relevant aspects of technology and then they will become the trainer. Alongside world-leading industry and academic institutes, the farmer champions and technology ambassadors will develop engagement activities where they will be responsible for encouraging the wider farming community in the UK/Ireland, Germany and Italy.

ACTIVITY PURPOSE

Efficient primary food production is driven by technology, however adoption of technological advances amongst farmers is low. Following on the success of the ETTO project's method of using student interns as advisers, this project will include the unique incorporation of farmer and technology ambassadors to **identify and disseminate** relevant **technology** to their peers, encouraging them to better utilise the technology they have or invest in new, relevant technologies **to improve efficiency**.

EXPECTED OUTCOMES AND IMPACT

Broader Impact

Farmer and technology champions: an increased understanding of relevant technologies and networking within the farmer and technology champion group but also with the project partners and international growers. Development of a **farmer technology network**.

Farmers

A better understanding of the benefits of adopting technology and improved practices on the farming business including financial and environmental. Greater confidence for investing in technology and investing time in changing their systems. Student ambassadors: an increased understanding of the **importance of technology in agriculture** and the challenges associated with adoption. Development of a wide range of employability skills including communication, teamwork and leadership and development of their horizon scanning skills.

Other Stakeholders (consumers, retailers, food processors, etc)

An increased understanding of the barriers to adoption and increased ability to encourage and **facilitate technology adoption**.



2. EDUCATION

Segment - **Professional Education**

Activity leader - **Gillian, A (Rose) | University of Reading |**

UniTo's Role - **Partner**

Contact Person - **Luca Battaglini**

Department involved - **Agricultural, Forest and Food Sciences**

Extent and kind of impact the activity has on its participants

- *Farmer Champions*: increased confidence in using technology and confidence in encouraging their peers to adopt.
- *Farmers*: greater **efficiency of primary food production** with benefits to resources including natural, physical and financial.
- *Student ambassadors*: greater confidence in promoting the use of technology and better understanding of the benefits to the farming business.
- *Technology manufacturers*: greater understanding of how to successfully promote technology uptake by farmers and feedback on potential future requirements.

The world at large

Better efficiency of farming systems through the adoption of technology may:

- **Optimise inputs** including water, energy, chemical applications
- **Reduce** greenhouse gas **emissions**, soil degradation, loss of biodiversity
- **Improve crop and livestock** production practices
- **Increase** global **food security**
- **Contribute to** the UN **Sustainable Development Goals**.

PARTNERS

- 003 - AIA
- 022 - John Deere
- 034 - Queen's University Belfast
- 045 - University Hohenheim
- 046 - University of Reading
- 047 - University of Turin
- 051 - ABP Food Group

An Introduction to Food Systems: Scientific, Technical and Socioeconomic Principles to Facilitate the Creation of Food Value Networks

Year - 2019

Total cost of the project - 51.500 €

EIT Funding to UniTo - 5.000 €



2. EDUCATION

Segment - **Professional Education**

Activity leader - **Weiss, JW (Jochen) | University Hohenheim I**

UniTo's Role - **Partner**

Contact Person - **Luca Cocolin**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

The food sector is undergoing dramatic changes fostered by global challenges such as a growing competition for resources, a rise of the global population, and changes in demographics and consumer behavior. To date though, the sector is not well prepared to address these challenges. There is a lack of knowledge on how to effectively create integrated value networks that can come up with new solutions to the above stated challenges.

An increasing integration of previously unconnected and fragmented actors is needed to bring in new scientific breakthroughs and technical developments under the consideration of socioeconomical aspects. In this SPOC we thus intend to introduce participants (professionals and students) to the notion of Food Systems, a new concept facilitating the description, smart design and **optimization of complex integrated value creation networks in the food arena**.

ACTIVITY PURPOSE

The **SPOC** will introduce participants to the concept of **Food Systems**. They will learn about its origins and its potential use such as e.g. to create new valued-added products and services to facilitate **more sustainable and healthier diets** and foster circularity and resource efficiency. System science principles will be introduced to analyze and optimize the workings of complex systems. Finally, specific elements of Food Systems will be discussed and possible cases of new networks considered.

EXPECTED OUTCOMES AND IMPACT

This SPOC on Food Systems will advance the system science knowledge of participants and enable them to begin addressing systemic challenges that the food sector suffers from. The course is designed as an introductory course for professionals as well as students, and **participants can receive credits (7.5 ECTS) for taking the course**.

Based on the fact that it is very much in line with the Food 2030 policy framework, and the focus of the new research program of Framework Program 9, the successor to the Horizon 2020 research program, we envision that there will be substantial interest not only from students, but also from outside actors e.g. in the policy as well as the professional arena. As such, we plan to hold the SPOC twice, once in September, where we expect a majority of student participation due to the semester schedule, and again at the end of the year 2019 where we should see attendance from the policy or the professional side. Overall, we expect to attract at least 100+ paying attendees per session to the course.

Learning more about how food systems work, and how they can be analyzed, optimized and newly created will enable participants to better address the big challenges that society currently faces going into 2050 including ensuring that all European Consumers have access to **sustainable and healthy diets**, while **providing foods in a environmentally sustainable and climate neutral way**.

Due to the political importance of the topic, the SPOC will also have a positive effect of branding **EIT Food** as a socially **responsible player in the innovation ecosystems** arena fostering trust through the dissemination of sound and rigorous science. Finally, it contributes to the building of an EIT Food alumni base and helps broaden EIT Food's network, since third parties may become interested in interacting with EIT Food to eventually become network or core partners.

PARTNERS

001 - *EIT Food IVZW*
 006 - *Universidad Autónoma de Madrid*
 024 - *KU Leuven*
 034 - *Queen's University Belfast*
 045 - *University Hohenheim*
 046 - *University of Reading*
 047 - *University of Turin*
 048 - *University of Warsaw*

Feed Quality and Safety



2. EDUCATION

Year - 2019

Total cost of the project - 80.000 €

EIT Funding to UniTo - 25.000 €

Segment - **Professional Education**

Activity leader - **Campbell, K (Katrina) | Queen's University Belfast**

UniTo's Role - **Partner**

Contact Person - **Francesco Chiesa**

Department involved - **Veterinary Sciences**

PARTNERS

018 - *Deutsches Institut für Lebensmitteltechnik*

034 - *Queen's University Belfast*

047 - *University of Turin*

PUBLIC ACTIVITY DESCRIPTION

The **quality and safety of animal feed** are of primary importance to ensuring **healthy meat production systems**. A good livestock diet can make or break profitability on a farm. Well fed animals are healthier, and more productive in terms of both quality and quantity. They are also more likely to live longer, and less likely to incur costly veterinary bills. The concept of these **SPOCs** are to **understand animal feeds and their components** to help improve farm practices, or enhance the business opportunities in the agriculture industry. Novel feeds and alternative proteins will also be presented.

ACTIVITY PURPOSE

This activity is to create two **interlinked SPOCs on feed quality and safety** for the continuous professional development for those in the sector to bridge the knowledge and innovation gaps.

EXPECTED OUTCOMES AND IMPACT

The overall learning outcome for participants enables them to become responsible feed producers and stakeholders in this sector and future innovators in **Europe's food sector**, which is equally important for the economy as well as the society. Furthermore, participants will develop an understanding of trends shaping the business environment and possible future scenarios of the feed sector including respective future-oriented business models. The course is initially designed to advance the knowledge of those in the feed business or those relying on the provision of feed as a business need in the production of livestock operators or start-up entrepreneurs who wish to know more about feed and the components to ensure it is healthy and nutritious. As such we intend to educate 50 students in 2019 whilst maintaining these numbers thereafter.

The courses combined and individually will:

- Demonstrate the **multidiscipline nature of feed production**
- Illustrate **knowledge and skills required for feed production** relative to livestock production
- Demonstrate **the ability to critically assess challenges** and drive forward solutions for the industry
- Demonstrate an in-depth **understanding of the range and types of feed insecurity affecting management**, traceability and authenticity, and the regulatory requirements and challenges to the maintenance of feed quality/safety
- Examine **the ethical and bioethical constraints of feed production**: at the crossroads of objects, subjects, regulations, institutions and governments especially for emerging concerns
- Encourage **career progression in research**, engagement with the Rising stars and solutions driven approaches to ensure feed quality and safety.

Engaging with Controversies in the Food System



2. EDUCATION

Year - 2019

Total cost of the project - 64.863 €

EIT Funding to UniTo - 8.602 €

Segment - **MOOCs**

Activity leader - **Ainslie, A.M. (Andrew) | University of Reading**

UniTo's Role - **Partner**

Contact Person - **Luca Cocolin**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

The MOOC 'Engaging with Controversies in the Food System' will be developed and led by the **University of Reading** (UoR), working with researchers at the **University of Turin** (UNITO), the educational team at the **European Food Information Council** (EUFIC) and a Rising Food Star to be identified. The course will be freely available to the public via the **FutureLearn (FL) platform**. It will deliver interactive educational activities to inform and engage citizens about key controversies in the **European food system**. Controversies will be selected after wider consultation, and are likely to focus on (i) the meat supply chain, possibly related to traceability (ii) the cereal/horticultural supply chain, perhaps related to GMOs and (iii) a burning environmental issue, for instance food waste. Participants will actively explore the controversies to evaluate state-of-the art understanding and current best practice, and to seek out opportunities for improvements, through responsible consumer choice.

ACTIVITY PURPOSE

Controversies in the **European food system impact** on efficiencies and food standards and affect consumer confidence. Better informed citizens are central to a measured, rational consideration of these issues. This free on-line educational course will engage consumers across Europe by providing a balanced, rounded analysis of the issues, based on cutting-edge research and expert insights. It will empower the public to evaluate each controversy for themselves, and to act as responsible citizens.

EXPECTED OUTCOMES AND IMPACT

Controversies in the European food system will be ranked using the following methods

a) examine the findings of the online survey completed by participants on the EIT Food funded '**Trust in the Food we Eat**' MOOC, undertaken by the same three partners. The survey is identifying critical areas of mistrust of the European food system.

b) conduct a **survey** of selected journals, newspapers and food industry publications over the past five years, which taken with the online survey, will inform the selection of 'controversies' to be studied in this MOOC. The end-users of the survey analyses will be EIT Food partners and the wider food sector actors who can target their future activities towards key areas of concern.

Innovative MOOC educational course = educational materials that incorporate existing knowledge, research outputs and public perspectives. This provision will engage EU citizens in even-handed exploration of key controversies in the food system.

Summary of safeguards and 'trust assurance' protocols across EU countries in relation to the three controversies = to produce cases of best practice that can be copied and scaled up to increase consumer understanding of the issues. This knowledge will be used by industrial and regulatory partners in EIT Food and beyond to implement and improve assurance schemes.

Informed consumers and FoodConnects Consumer Champions = **The course will educate ~18,000 citizens**, empowering them with knowledge to make better informed decisions about the food they eat.

Innovations to **improve consumer awareness of the food system** = Participants will co-produce solutions to improve their understanding and will feed into innovation pathways in EIT Food.

EIT Food Impact Indicator: Increase in training/education programs successfully completed by citizens = ~18,000

The world at large will benefit from a balanced, rational assessment of the three selected controversies in a European context.

PARTNERS

016 - EUFIC

046 - University of Reading

047 - University of Turin

Online courses re-runs

Year - 2019

Total cost of the project - 39.976 €

EIT Funding to UniTo - 17.500 €

PUBLIC ACTIVITY DESCRIPTION

Under the 2018 **KAVAs**, online courses allowed us to reach **16,000+ learners**, thanks to Activity Leaders hard work on developing **high quality course material**. From learners' responses it is clear that the courses have created excellent assets that should remain current in our portfolio - hence why it is essential to provide additional resources to online course team to ensure re-runs of the successful online course developed under BP19.

Generally speaking all courses developed under previous business plans are expected to re-runs at least 3 times over a period of 2 or 3 years. An analysis of each course performance is made after each course run, and decision is made to continue running session of the course or to archive it. A course may be archived for the following reasons :

- A) The course is not fit for the market anymore
- B) 3 consecutives runs of the course with negative feedbacks from learners.

ACTIVITY PURPOSE

This activity consists in providing **additional resources to online course team** to ensure re-runs of the succesful online course developed under BP19. The budget provided will enable :1) the maintenance of the course and its improvement based on learner feedback, 2) its partial or full automation, and 3) its faciliation by experts.

EXPECTED OUTCOMES AND IMPACT

While the percentage of online learning possibilities is rising, online learning environments can seem quite intimidating for learners who have not had a chance to try them yet. It presents new challenges beyond those of a traditional classroom because many learners are unfamiliar with the **online learning environment**, which may include unfamiliar technology, isolation from instructors and university staff, time-management, and a lack of face-to-face interaction with other learners.

However, **online courses** can be attractive to some learners because they **offer flexibility**, particularly for those with demanding professional or personal responsibilities. As online course publisher, it is essential that **EIT Food** gives additional attention to strategies that will keep our learners engaged, creates a successful learning environment, and provides a rewarding **learning experience** where learners feel supported, valued, and connected. **MOOCs** are courses aiming to inform citizens and consumers by providing a variety of online resources for free. MOOCs seek to capitalise on a high volume of learners by encouraging peer learning in place of a more conventional learning in academic institution.

EIT Food online courses are hosted on **FutureLearn**, a platform where users learn together, and learn with experts. Every year, EIT Food publish encourage its partners to develop new online courses on subject that are aligned with EIT Food strategic objectives, and that address a gap in its portfolio. In 2018, EIT Food facilitated the development of 5 MOOCs on FutureLearn. The courses reached 16k+ learners. In 2019, EIT Food would like to reach even more learners and provide access to online education worldwide on a larger scale, thanks to the design of new courses, and the re-runs of the ones developed in 2018.



2. EDUCATION

Segment - **MOOCs**

Activity leader - **Bodereau, V (Vivien) | EIT Food |**

UniTo's Role - **Partner**

Contact Person - **Katiuscia Sacco**

Department involved - **Psychology**

Ultimately, EIT Food aims to provide reliable and transparent information to the public worldwide.

PARTNERS

- 001 - EIT Food IVZW
- 034 - Queen's University Belfast
- 045 - University Hohenheim
- 046 - University of Reading
- 047 - University of Turin
- 059 - CLC North-West

Food for thought - the interaction between food and brain



2. EDUCATION

Year - 2018

Total cost of the project - 49.998 €

EIT Funding to UniTo - 31.000 €

Segment - **MOOCs**

Activity leader - **Cicerale, AC (Alessandro) | University of Turin (Unito)**

UniTo's Role - **Coordinator**

Contact Person - **Katiuscia Sacco**

Department involved - **Psychology**

PUBLIC ACTIVITY DESCRIPTION

This **MOOC** will explain and teach the relationship between food, mind and brain, focusing on the last link of the food chain: all of us, the consumers. Drawing from biology, psychology, neurosciences and nutritional sciences, we will discuss topics such as the **psychological, unconscious and neurobiological factors** underlying food choices and on the other side the **effects of eating disorders, of some diets** (i.e., high in fructose) and of **bioactive compounds on the brain**. Students will learn how seemingly different topics can be connected in a unified framework. Furthermore, they will learn science-based facts about the food they eat as well as tricks and strategies to improve their everyday behaviors regarding food intake.

ACTIVITY PURPOSE

Our brain, our mind and the food we eat are connected in many ways, but most people are unaware of this fact. This is why we will develop an **interdisciplinary MOOC** based on neuroscience, nutritional psychology and biology that will explain how the food we eat influences not only our body composition and metabolism (i.e., diets rich in sugar) but also our brain and behaviour, and how neurobiological, psychological (positive and negative emotions) and sensory mechanisms influence our food choices.

EXPECTED OUTCOMES AND IMPACT

On average, the enrolment rate in 2016 was of about **8000 students per course**, with a variable completion rate (Class Central, 2016). Therefore, we expect to reach thousand of learners with our activities, also by leveraging the role that universities and research institutes play in education.

This **MOOC** will provide value to different groups of people:

- **General public**, as they will learn **science-based notions** about the **relationship between food and the brain**. The notion gained will help people understand their food choices and make better and healthier food choices. The course could be a gateway for other MOOCs on food and health, as its unique approach will draw people with different interests
- **Undergraduate students**: the course will cater to students from many fields (psychology, nutritional science, biology, medicine, nursing) and will help them in connecting different subjects. By showing the relationship between food and brain (sometimes direct, sometimes indirect), we hope to inspire some students to explore more in-depth food and brain related topics during their academic careers
- **Health professionals**: the course will be useful as continuous education for psychologists, nutritionists, dieticians, nurse practitioners, medical doctors and so on.

The course will also be a good complement for other EIT courses. Furthermore, this education activity could be easily connected to **EIT Health MOOCs** (i.e., Healthy ageing in six steps), giving a unique opportunity to link both EITs. For example, the content developed for this MOOC could be, at least in part, used as supplementary material for traditional teaching activities and adapted for communication purposes.

PARTNERS

032 - Institute of Animal Reproduction and Food Research
045 - University Hohenheim
047 - University of Turin

The 14-days Healthy Diet Course



2. EDUCATION

Year - 2018

Total cost of the project - 66.250 €

EIT Funding to UniTo - 35.000 €

Segment - **MOOCs**

Activity leader - **Cocolin, LC (Luca) | University of Turin (Unito)**

UniTo's Role - **Coordinator**

Contact Person - **Luca Cocolin**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

Our aim is to produce a **MOOC** illustrating to the society the **benefits of healthy diets**. Starting with some general considerations about the benefits of a healthy diet, the health effects and the possible impact of foods on some acute and chronic diseases in the light of the recent scientific evidences will be described. The benefits and properties of certain food groups will be discussed, by taking into account the availability of these in the Northern, Central and Southern European countries. Two types of diet: the **Mediterranean diet and the Baltic Sea diet** will be analyzed in detail. For each of them, the history, evolution, the recommended consumption frequencies, the characterizing foods, the sustainability and the health benefits will be discussed. The basics of a third diet, the **Okinawa diet** will be presented too, as an example of healthy Asian diet. Some typical foods of this diet and how to include them in a European food scheme, such as healthy Asian "contamination" will be presented.

ACTIVITY PURPOSE

The purposes of this activity are the following:

- **Education of the general population about healthy diet**
- **Improvement of knowledge about two types of healthy diets** (the Mediterranean and the Baltic Sea diet)
- **Training on specific Japanese foods** with a documented health benefits, in order to expand in European citizens the knowledge about healthy and little known foods
- **Warning against false beliefs related to nutrition**
- **Increasing the curiosity towards healthy foods in different cultural contest**

EXPECTED OUTCOMES AND IMPACT

We expect to produce an **easy-to-use MOOC** for the general population. Through 10-15 minute presentations, we will present to the users the currently available scientific evidence about the **healthy diet**. In addition, a brief review on the role and significance of the gut **microbiota** will be provided, since there is currently much interest on it, but little information at the population level.

We will use **simple language**, easy to be understood; slides with clear images, highlighting a few important concepts will be employed. Some recipes will help to put into practice the theoretical concepts presented. At the end of each lesson, by using a self-questionnaire, the user will interactively check if he/she has acquired correctly the concepts presented. In addition, at the end of each session there will be a warning relating to myths about the specific topic, since false beliefs and misconceptions about nutrition are very frequent.

The educational material will comprise comprehensive **slides with animations and cartoons** that will describe in a simple way the message delivered, moreover with the help of specialized services at the **University of Torino** and **University of Helsinki**, we will shot videos on relevant topics, such as the preparation of the foods.

The possible impact is to increase knowledge at the consumer's level in a scientific but simple and enjoyable manner.

The description of two kinds of **diets** characteristic of **Northern and Southern Europe** respectively, and of some typical foods of the **Japanese (Okinawa) diet** (and how to find European alternatives), makes the course of potential interest to a greater number of users, aiming to stimulate curiosity, and potentially encouraging the use of foods not usually eaten.

The recipes represent a further incentive to this direction. Moreover and most importantly, the course highlights the fact that there are several possible ways to compose a healthy diet- but that these diets have also many common items.

PARTNERS

044 - University of Helsinki

047 - University of Turin

Trust in the Food we eat



2. EDUCATION

Year - 2018

Total cost of the project - 49.999 €

EIT Funding to UniTo - 9.374 €

Segment - **MOOCs**

Activity leader - **Mauchline, A L (Alice) | University of Reading |**

UniTo's Role - **Partner**

Contact Person - **Luca Cocolin**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

The MOOC '**Trust in the Food we eat**' will be developed and delivered by experts at the **University of Reading** (UK) with input from academics and researchers at the **University of Turin** (Italy) and the public education team at the **European Food Information Council** (Belgium). The short course will be **freely available** to everyone through the **EIT-Food platform**. It will deliver succinct, participatory, educational activities to inform and educate citizens about the **food supply chain**. There will also be an exploration of the regulations and safeguards currently in place to ensure the production of safe, high quality foods that meet ethical and environmental standards. Participants will be able to provide input on their trust issues around the food supply chain and engage to improve the situation. Participants will leave the course with an understanding of how responsible consumer choice can be an influential force for good.

ACTIVITY PURPOSE

There is a fundamental problem of low consumer trust in food that will be addressed by engaging and educating large numbers of consumers across Europe through this MOOC. This **free on-line educational course** will provide the public with concise, factual information from consensual science and survey results to allow them to evaluate the situation for themselves. This will empower them to act as **responsible citizens** and to use consumer power to **improve the quality and safety of the food we eat**.

EXPECTED OUTCOMES AND IMPACT

The **target audience** for this MOOC are the **consumers / general public**. The following is a list of outputs of the MOOC with their anticipated impacts on this target group:

- 1. List of priority areas of low consumer trust:** Participants in the course will be informed that they are contributing towards the generation of new knowledge and understanding of consumer trust in food. They will provide their own opinions in an online survey as part of the course and the data will be analysed and reported back to the community. The end-users of these data will be EIT-Food partners who can target their future activities towards the key areas of concern and the participants in the course who will understand their trust issues in a wider context.
- 2. Innovative MOOC educational course:** Innovative educational materials that incorporate existing knowledge, research outputs and understanding of consumer preferences. This provision will engage EU citizens in a debate about trust in food.
- 3. Crowd-sourced summary of safeguards and 'trust assurance' labelling across all EU countries:** This will produce a series of cases of good practice that can be copied and scaled up to increase consumer trust in food. This knowledge will be used by industrial and regulatory partners in EIT-Food to implement and improve assurance schemes.
- 4. Informed consumers and FoodConnects Consumers Champions:** The course will educate 30,000 citizens and empower them with knowledge to increase their trust in food.
- 5. Innovations to improve consumer trust in food:** Participants will be able to provide input and help to co-produce solutions to improve consumer trust and will feed into innovation pathways in EIT-Food.
- 6. Impact Indicator:** Increase in training/education programs successfully completed by consumers (life long learning) = 30,000 and feedback by participants about their change in trust.

PARTNERS

016 - **EUFI**
046 - **University of Reading**
047 - **University of Turin**

Fork2Farm: Sustainable agriculture in a changing environment



2. EDUCATION

Year - 2018

Total cost of the project - 50.000 €

EIT Funding to UniTo - 20.000 €

Segment - **MOOCs**

Activity leader - **Campbell, K (Katrina) | Queen's University Belfast |**

UniTo's Role - **Partner**

Contact Person - **Giovanna Ponti**

Department involved - **Veterinary Sciences**

PARTNERS

003 - AIA

013 - DSM

034 - Queen's University Belfast

047 - University of Turin

541 - Analytics Engines

PUBLIC ACTIVITY DESCRIPTION

Global food supply chains are increasingly encountering considerable problems impacting on safety and sustainability affecting the food industry and reducing consumer trust. This MOOC will focus on threats to **global food security** & consider key challenges which need to be overcome in order to **maintain healthy & sustainable food supplies** for consumer wellbeing in both the developing and developed world. It will examine threats of an environmental, biological or chemical nature that can affect the one health approach to food systems with impacts to soil, plant, animal and human health. Emerging concerns of natural toxins, endocrine disruptors and nanoparticles that can bioaccumulate through the food chain are of heightened interest due to climate change and environmental pollution. The course will cover topics including: food integrity, soil & plant & animal health and climate change considering the ethical and bioethical constraints and will examine solutions to ensure food security.

ACTIVITY PURPOSE

Awareness of the known and emerging concerns affecting the food industry and the consumer is crucial for creating an **ASsured, Safe and Traceable food (ASSET) system**. The course is designed to create an awareness and understanding of both the **complexity of the global food supply chain** as comprised of 90% small to medium sized enterprises (SMEs), the **vulnerability of the food industry** to emerging threats & the solutions to mitigate against these emerging threats at early stages in the supply chain.

EXPECTED OUTCOMES AND IMPACT

- Demonstrate the **interconnected one health approach to food production from farm2fork**
- Illustrate knowledge and skills required to evaluate current and **emerging risks to food safety and relate these to potential threats to human / animal health and global food security** highlighting solutions to the issues.
- Demonstrate the ability to critically assess the **range of emerging risks that may be introduced during food production and manufacture systems** and determine their potential impact on food safety and consumer health
- **Apply knowledge of international food standard and legislative** setting to aspects of food safety control and relate to impacts on international trade and regulatory systems
- Demonstrate an in-depth understanding of the range and types of **food insecurity affecting food safety, traceability and authenticity**, and the **regulatory requirements and challenges to the maintenance of food quality/safety**
- Examine the **ethical and bioethical constraints of the food chain**: at the crossroads of objects, subjects, regulations, institutions and governments.
- Encourage **pursuit of a career in research, industry or entrepreneurship in the food sector** through engagement with the Rising stars and solutions driven approaches to ensure food security.

Superfoods: myths and truths



2. EDUCATION

Year - 2018

Total cost of the project - 54.997 €

EIT Funding to UniTo - 41.450 €

Segment - **MOOCs**

Activity leader - **Cicerale, AC (Alessandro) | University of Turin (Unito)**

UniTo's Role - **Coordinator**

Contact Person - **Katiuscia Sacco**

Department involved - **Psychology**

PUBLIC ACTIVITY DESCRIPTION

This MOOC will explain and teach the science and the fact behind one of the hottest topics related to food, at least in the eye of the medias and general public: **superfoods**.

Drawing from the fields of biology, cognitive sciences and nutritional sciences this MOOC will discuss superfood from multiple perspectives, including communication and marketing aspects , the real dietary value of, biological and metabolical aspects of superfoods consumption (positive and negative) and how regular foods are viewed in comparison to super foods. The course will give its viewers useful information and actionable advice and also aims to raise awareness about food trends and fads and, in general, food myths.

ACTIVITY PURPOSE

Goji berries, amaranth and quinoa are almost common names, and while physalis or sea buckthorn might not be, they have all been defined as “super”. To investigate the facts surrounding **superfoods** and some “**ancient**” grain and pulses and dispel the myths around them, we will develop a MOOC based on biology, cognitive sciences and nutrition science, highlighting the good, the bad and the ugly aspects of this new phenomenon and help our viewers find ‘super’ characteristics in traditional foods.

EXPECTED OUTCOMES AND IMPACT

- We expect to reach more than thousand of students, as the enrolment rate in 2016 was of **more than 8000 students per MOOC**. Unlike other MOOCs dealing with technical or economical topics, this MOOC is aimed at the general public.
- It will be particularly interesting for health-conscious people, but as superfoods are quite common, it is likely to attract a diverse audience, with different goals. Being able to **provide science-based facts** to all of these people will be the primary goal and measure of the success of this online course.
- This said, we believe that our course could be particularly interesting for specific groups:
 - a) **foodies, food bloggers and, in general, people with a non-professional interest in food**. Our MOOC will provide useful information on superfoods and on their role in a balanced meal and on their benefits, as well as suggestions on how to use them
 - b) **people with an interest in fitness and well-being**. Marketers attribute health benefits to superfoods. We aim to correct wrong notions and bias and to provide accurate, science-based but accessible notion on the biological aspects of superfoods
 - c) **cooks, chefs and caterers**. We hope that our MOOC will inspire all people working in the food/catering industry, pushing them to valorize both new and old superfoods and to further their education in the topics discussed in this course.

PARTNERS

032 - Institute of Animal Reproduction and Food Research

046 - University of Reading

047 - University of Turin

3.

BUSINESS CREATION



EIT Food Accelerator Network FAN



3. BUSINESS CREATION

Years - 2019/2020

Total cost of the project - 6.279.707 €

EIT Funding to UniTo - 48.825 €

Segment - **EIT Food Accelerator**

Activity leader - **Mandl, CM (CHristoph) | CLC Central |**

UniTo's Role - **Partner**

Contact Person - **Dario Peirone**

Department involved - **Law**

PUBLIC ACTIVITY DESCRIPTION

The existing EIT FAN (Food Accelerator Network) programme currently operates in five **acceleration hubs** based in UK, ES, CH, IL and DE. In 2020 the network expands to a sixth location in Finland thereby enabling greater **business impact from European research and innovation**. The number of startups accelerated will be increased from 50 to 60 in 2020. Application and selection of agrifood startups will be managed on a centralized IT platform. Selected startups benefit from a structured 4 month programme with expert coaching from EIT Food partner companies, investors, and experienced entrepreneurs. The programme runs in parallel in all of the six acceleration hubs. At the end of the programme, startups can compete for 3 financial prizes. Graduates of the EIT FAN are invited to apply for the RisingFoodStars association. Hereby they become part of the EIT Food ecosystem and contribute to EIT Food's overall innovation strategy.

ACTIVITY PURPOSE

The EIT FAN **supports agrifood entrepreneurs to grow their businesses**. In 2020 the program will accelerate approx. 60 agrifood startups, with a target of 10 per acceleration hub. By leveraging the experience of EIT FAN 2019 and the competence of all partners involved we want to establish the EIT FAN as Europe's no.1 agrifood startup accelerator program in the upcoming years. Our alumni are attractive to investors and EIT Food corporate partners.

The EIT FAN kicks-off in January when opening the application process for agrifood startups. Before the official start of the **application period**, we will begin promoting the program to attract high-quality applications. All agrifood startups having less than EUR1m in sales and less than EUR500k in investment (excluding research body/university funding) are welcome to apply. They must bring unique and differentiated proposals and business ambition.

After the application process ends mid-March, startups go through a **two-stage selection process**:

The **first round of judging** will be held in April: The startups will be judged online - using an advanced methodology - by a carefully selected and experienced panel of experts, entrepreneurs, investors and EIT Food partners.

The **second round of judging** will be held in May: Startups selected in round one will be invited to pitch in person or by video. The **best 60 startup** teams will be accepted for the program.

The EIT FAN will be run in parallel in Lausanne, Haifa, Cambridge, Bilbao, Helsinki and Munich from June – October. Selected startups will go through an intensive and tailored acceleration program governed locally. The curriculum will cover important insights into the agrifood sector and a wide array of entrepreneurial methods and tools. Mentors, experts and resources will be shared across locations to drive efficiency, leverage synergies and impact. The corporate partners will coach the selected startups by providing mentorship, professional guidance, and access to laboratories, pilot plants and potential customers.

In October, agrifood startups will compete for three financial prizes. The award ceremony will be held at the yearly EIT Global Food Venture Summit.

Outline of Tasks/Activites

A2001 Programme management, centralized services and governance

EIT Food will be responsible for the European coordination of the accelerator programme. Moreover it will drive synergies across locations especially when it comes to cross-location mentorship, communications, as well as the application and judging process.

A2002-A2007 Execute the accelerator programme (per location)

The aforementioned tasks reflect the execution of the EIT FAN on the local level. This includes but is not limited to local program management, coordination among local partners, coaching and mentoring of the startups, running the programme infrastructure (esp. co-working spaces, events), curriculum design and implementation.

EXPECTED OUTCOMES AND IMPACT

Startups often lack the business skills, market access, financial means and experience to commercialize their ideas. The EIT FAN equips entrepreneurs with the skills they need to commercialize their ideas and grow their businesses. Approx. 60 agrifood startups will be accelerated this year across the 6 acceleration hubs (Switzerland, Germany, Israel, Spain, Finland and the UK), **assuming 3-5 people per startup**, we expect 180-300 people to be developed this year alone. The programme is now in its third year. At which point, 150 start-ups would have been accelerated, **Startups will be able to leverage the EIT Food ecosystem**. Also there will be the possibility (e.g. for corporate funding partners) to send internal teams to the programme, accelerating internal business ventures and learning from the startup ecosystem.

PARTNERS

- 001 - EIT Food IVZW
- 007 - AZTI
- 009 - Bühler
- 012 - Döhler
- 014 - EPFL
- 015 - ETH Zürich
- 019 - Givaudan Nederland
- 022 - John Deere
- 030 - PepsiCo
- 040 - Strauss Group
- 041 - Technische Universität München
- 042 - Technion
- 043 - University of Cambridge
- 044 - University of Helsinki
- 046 - University of Reading
- 047 - University of Turin
- 049 - Valio
- 050 - VTT Technical Research Centre of Finland
- 061 - CLC South
- 062 - Givaudan Switzerland
- 092 - PeakBridge Partners
- 093 - UTUM
- 104 - Danone Research
- 135 - Société des Produits Nestlé

4.

COMMUNICATION



‘SEE & EAT’: Communicating the benefits of visual familiarity as a strategy for introducing healthy foods into children’s diets



4. COMMUNICATION

Years - 2019/2020

Total cost of the project - 923.832 €

EIT Funding to UniTo - 123.644 €

Segment - **Explore**

Activity leader - **Houston-Price, CMT (Carmel) | University of Reading |**

UniTo's Role - **Partner**

Contact Person - **Giuseppina Cerrato**

Department involved - **Chemistry**

PUBLIC ACTIVITY DESCRIPTION

Healthy eating in childhood tracks into adulthood, so promoting dietary variety should begin early. Children's food preferences depend on food familiarity and liking, and research shows that **visually familiarizing children with foods before they taste them** (e.g. by looking at picture books) increases their willingness to taste, liking and intake of targeted foods. Year 1 activity will provide downloadable resources to support parents in familiarizing preschoolers with vegetables (e.g. interactive e-books, parent guidance) via the Food Unfolded portal. In Year 2, we will widen the dissemination of these resources by:

1. translating 'See & Eat' e-books into further languages & involving new partners in disseminating guidance in additional countries;
2. creating new versions of the supporting app to broaden access to families in additional countries;
3. involving education and health professionals in public engagement activities such as workshops and training sessions on how to use See & Eat resources;
4. exploring opportunities to disseminate books or other products through food retailers, such as alongside point of sale of healthy foods.

ACTIVITY PURPOSE

Year 1 of the See & Eat project will deliver an evidence-based resource to support parents in **introducing vegetables into preschool children's diets**. The focus of Year 2 will be to broaden access to this resource to a wider population of users.

By the end of Year 1, the See & Eat resources, currently under development within the Food Unfolded site, will consist of a set of 24+ **interactive e-books about vegetables** in English and Italian that parents can download, free of charge, along with guidance on how to use and adapt the books to encourage intake of vegetables, and hence greater dietary variety, in their preschool children.

In Year 2, we plan to broaden access to these resources by translating the e-books and other guidance for parents into further European languages, and by engaging in additional outreach activities involving relevant national organisations in each country. New partners will join the existing consortium to support this work (University of Warsaw, University of Helsinki).

We will also further develop the app that supports the e-books to broaden access to speakers of **other languages than English and Italian** (Polish, Finnish, French, & Dutch), and we will explore the potential to develop this app for smartphone, to broaden access to families without iPad/android tablets.

Subject to the findings of the commercialization report to be produced by Colruyt Group during Year 1, we will pursue the potential for the See & Eat e-books to be published in hard copy or for other related physical products to be created and distributed through EU food retailers in Year 2.

Finally, Year 2 will involve significant communication activity around the publication of the findings of our evaluation of the e-books' effectiveness in Year 1, in order to raise **awareness of the existence of the resources** and promote their use among parents, early years educators, and health professionals. This activity will be led by EUFIC and our in-country dissemination partners, and will include webinars, podcasts and workshops for education and health professionals, as well as direct communications with parents of preschoolers.

EXPECTED OUTCOMES AND IMPACT

The goal of the project is to increase vegetable intake and dietary variety in preschool children.

By the end of Year 1, an online parent resource containing 24+ e-books about vegetables in English and Italian, and guidance on how to use these to increase children's vegetable intake, will be available via the Food Unfolded website. Year 2 activities aim to broaden access to these resources across platforms, sectors, and European countries.

In Year 1, the **app supporting the e-books** is being developed for iPad and Android tablet users only. However, an estimated 74% of adults across advanced economies have access to a smartphone, with numbers continuing to rise. During Year 2 activity, we will explore the viability and cost of developing a similar app for smartphone, which would broaden access to all socio-economic groups.

Dissemination efforts in UK and in Italy will promote the results of the outcome evaluation in Year 1 and the Food Unfolded resources. The e-books, the supporting app, and the parent guidance will be translated into Polish, Finnish, French, and Dutch. Events will be held to expose different audiences (parents, early years educators, health professionals, and researchers) to the **benefits of using See & Eat resources in efforts to promote vegetable consumption among children**.

In all countries, resources will be promoted through established consumer networks by EUFIC and Colruyt Group, and by in-country dissemination partners such as British Nutrition Foundation (UK), INRAN (Research Centre CREA – Food and Nutrition, IT), CSB Onlus (Centre for Child's Health, IT), Piemonte Regional Public Health Service (IT), Empowering Children Foundation (Poland), Finnish Society for Food Education (Finland) and Mannerheim League for Child Welfare (Finland).

Evidence of the project's reach and impact will come from download statistics, press visibility, attendance figures at public engagement and dissemination activities, and consumer **reports of changes in children's diets**.

PARTNERS

010 - Colruyt
016 - EUFIC
044 - University of Helsinki
046 - University of Reading
047 - University of Turin
048 - University of Warsaw

Towards a smarter shopping list



4. COMMUNICATION

Year - 2020

Total cost of the project - 526.959 €

EIT Funding to UniTo - 126.386 €

Segment - **Explore**

Activity leader - **Santa Cruz, ESC (Elena)**
| Fundacion ATZI |

UniTo's Role - **Partner**

Contact Person - **Alberto Borraccino**

Department involved - **Sciences of Public Health and Pediatrics**

PUBLIC ACTIVITY DESCRIPTION

The aim of the project will be to develop an **interactive platform** for families with children from different countries where they will have the opportunity to receive information and advice about how to **improve their food habits** and choices.

The platform will also give users the ability to interact with the online-content, receive expert-based recommendations and access educational resources about food and nutrition in order it enhance their food literacy. The present platform will also be of interest for stakeholders from the food sector (i.e. food retailers), as it will offer tools to gain relevant **insights into consumer behaviour and preferences**.

The platform will allow data collection and analysis for the development of predictive models that facilitate decision making, encourage healthy life-styles, quantify consumer trust, and help to focus education campaigns towards healthy food choices.

ACTIVITY PURPOSE

One of the main daily challenges faced by families with small children is to purchase foods that meet their children's nutritional needs and preferences. To address this challenge, parents must understand their children's nutritional needs and identify those products that fit their requirements.

One way of **supporting families in making adequate food choices** is to examine their dietary habits. However, due to the high social-desirability of health-impacting behaviours, the assessment of dietary habits from self-reported data is problematic. One way to overcome this limitation, is to monitor the purchases of food items and products through objective approaches. Loyalty cards, for instance, are a reliable and cost-effective source from which nutritional habits may be extracted. In addition, machine learning techniques, such as image and text recognition may offer additional ways to extract relevant information about dietary habits from sales checks and meal images.

Here, we propose to build a novel internet platform based on such techniques, to overcome the bias inherent to self-reported data and to assist families with young children in making adequate food choices. In addition, the platform will be designed in an interactive way. In this way, it could improve the information exchange between families with children and platform **nutritional experts** based on scientific knowledge and specialist working in the field. This interaction will contribute to improve the food literacy of families with small children and promote healthy and sustainable nutritional habits.

Finally, the platform will also offer a variety of **tools** from the field of **market-analysis** to gain insights into the consumer behaviour and preferences of families with children living in Europe. These tools will provide access to high value data and analytical services, thereby providing an opportunity to generate revenue and develop strategic partnerships with stakeholders in the food sector.

The key components of this activity are:

T1. Management and coordination

Leader: AZTI

T2: Nutritional guidelines for families in three countries (Italy, Finland and Spain)

Leader: University of Torino

Participants: University of Helsinki, AZTI, Grupo AN

T3. New methodologies to observe consumers and get insights

Leader: AZTI/University of Helsinki

Participants: University of Helsinki, University of Torino, Grupo AN.

T4. Data collection and analysis

Leader: University of Helsinki/ AI Talentum.

Participants: All partners.

T5. Interactive internet platform to promote "smart" food choices

Leader: AI Talentum/AZTI

Participants: All partners.

T6. Dissemination

Leader: University of Torino

Participants: All partners.

EXPECTED OUTCOMES AND IMPACT

Previous projects have revealed the need to **increase the food literacy** of families and to educate children towards adapting healthy and sustainable dietary habits. Families with children represent a large and important consumer group within the European Union (65 million European households have children). The increasing **concern for the health of children** and the awareness that healthy nutrition contributes to the overall well-being of families has lead to an increasing demand for information and educational resources on child feeding and family nutrition. However, to date, the available resources do not provide family-specific advice and recommendations based on expert knowledge and specialists working in the field.

Here we propose to develop a **novel internet platform** that provides analytical services as well as scientific expertise and nutritional recommendations for families. We will develop novel analytical tools by extracting information on dietary habits to deliver **family-specific recommendations** on food sources and products that meet the families with children's individual requirements. Customer loyalty programmes are widely used among retailers and thus offer a cost-effective and immediate opportunity of gathering consumer data from families. On the other hand, emerging technologies, such as the internet of things (IoT) and artificial intelligence (AI), provide novel opportunities to extract relevant consumer information from camera-based images of foods, meals and purchase tickets.

The present project will use these techniques to support families in making **healthy and sustainable food choices** that meet their **children's nutritional requirements** by

1. providing novel family-specific analytical services
2. facilitate the access to scientifically validated educational resources.

Finally, the present internet platform will host tools from the field of market-analysis, to help stakeholders adapt their products to the requirements of families with children.

PARTNERS

007 - AZTI

020 - Grupo AN

044 - University of Helsinki

047 - University of Turin

061 - CLC South

503 - AI Talentum

The V-PLACE – Enabling consumer choice in Vegan or Vegetarian Food Products



4. COMMUNICATION

Year - 2020

Total cost of the project - 741.109 €

EIT Funding to UniTo - 74.049 €

Segment - **Explore**

Activity leader - **Braun, SB (Susanne) | University Hohenheim |**

UniTo's Role - **Partner**

Contact Person - **Patrizia Busato**

Department involved - **Agricultural, Forest and Food Sciences**

PUBLIC ACTIVITY DESCRIPTION

The demand for vegan and vegetarian food products including alternatives to meat, milk, or eggs, has expanded considerably during recent years in Europe. For many consumers wanting to replace products of animal origin partly or completely, the search for the right information including the avoidance of nutritional deficits is a challenge. Integrated into FoodUnfolded, the V-PLACE web portal will bring this information together empowering consumer choices in an **easily accessible and consumer centric platform**.

Consumers can select their **preferred diet** (omnivore, flexitarian, pescatarian, vegetarian, or vegan) and will receive **tailored information** in an easy and understandable way. An engaging and informative app with games and quizzes will complement the V-PLACE and present health and environmental benefits. In the market for food products, significant growth is predicted via mass-market substitutions rather than expansion of niche products.

There is an identified need to research and actualize the knowledge about consumer expectations, attitudes, and needs to adopt current strategies accordingly. V-Place will look at the interplay of product properties, expectations, and **communication on vegan and vegetarian food products** in consumer studies including ingredients and health properties (perceived and expected). Results and data will continuously feed into the V-PLACE web portal on EIT FoodUnfolded - thereby making it a living knowledge hub also after the project has ended.

ACTIVITY PURPOSE

For the consumer who wants to replace products of animal origin in their diet, **V-PLACE** is bound to be the first science-based one-stop **web portal** where **information on product alternatives** including e.g. nutritional values and ingredients will be presented in an appealing and actionable way. V-PLACE will be firmly integrated into the EIT FoodUnfolded platform and has the overall aim of facilitating the conversion to more sustainable diets based on science-based recommendations. It will be linked with relevant European and national vegan/vegetarian associations and multipliers. Consumers will be able to select their diet of preference (with and without meat, dairy, eggs, fish, completely or temporarily) and will then see tailored information in an easily understandable way. An **entertaining and informative app** with games and quizzes will complement the V-PLACE.

The market for vegan and vegetarian food products, especially alternatives to meat, milk, or eggs, has expanded considerably during recent years in Europe. A clear barrier to industrial refocus and gaining market share is the lack of knowledge on what exactly the consumer wants and knows within this expanding space, from a sensory, conceptual, and key attribute perspective. Meatless food products e.g. do not only invoke the interest of people who follow a vegan or vegetarian diet but also of mainstream consumers who want to reduce their meat consumption for ethical reasons or are looking for healthy, alternative products in their diet. Thus, given a clear understanding of consumer needs in such products, they can move from niche to mainstream with associated industrial and societal impact around health and sustainability. This is supported by the development of a measurement and communication tool to be derived from implicit and/or explicit focuses including data collection in three key areas: ingredients, health and sustainability.

All of these will contribute to this data-driven metric and act as a **framework for vegan product consumer** positioning underpinning the V-PLACE portal. To further the desired properties of a vegan based/enhanced diet, and to contribute to the development of new products and new business models, we will focus on following analytic steps in metric development:

1. **Implicit Expectations:** What are the consumer's expectations towards the sensory properties of vegan and vegetarian convenience products (i.e. 'must taste exactly like the corresponding product' or is there flexibility in acceptance)?
2. **Implicit/Explicit Perception:** what are their perceptions related to food ingredients and additives including eggs and flavoring, and
3. **Explicit Expectations:** what are their expectations towards possible health and/or social benefits, e.g. sustainability? The results will underpin and continuously nurture the V-PLACE portal on the EIT FoodUnfolded website, thereby making it the first portal where research is at the centre for Vegan- and Vegetarian-based diets.

EXPECTED OUTCOMES AND IMPACT

Consumers are still hesitant to replace meat or dairy partly or completely. Reasons for this can be a perceived lack of trusted information on nutritional value and perceived possible deficiencies in micronutrients or a disappointing first encounter with such foods due to unsatisfying sensory properties. In a developed market, information about consumer motivation and perceived barriers are very valuable for industry as well as public health and animal welfare. To overcome those barriers, V-Place will tackle this challenge from two sides: via consumer research to elicit perceptions, attitudes, and intentions, and secondly, via a dedicated place on EIT FoodUnfolded communicating reliable and science-backed information:

Outcome 1
The V-Place: a dedicated online portal for information on **sustainable, meat-free consumption**.

Outcome 2
EU Vegan state of the art: up-to-date and **authentic information from qualitative studies** in 5 European countries to be placed on the V-Place.

Outcome 3
Based on the results from the qualitative study, a survey in 6 European countries on sustainable and meat-free consumption.

Outcome 4
First outline of an app integrating previous results and linking with the V-Place. Report on the feasibility of machine learning of vegan purchasing and eating behavior for **integration into the APP** for real time data gathering to continuously update the V Place portal in Food Unfolded.

Impact 1
Society: enabling the mainstream availability of healthy, sustainable, and cruelty-free food products in Europe to foster public health and a more sustainable society by **mitigating the negative environmental effects of meat** and dairy production, including animal welfare. There also is a longer term research potential related to the digital food perspective, where we look at the virtual human and how they behave and how we can learn from this and how they may behave in the future on a mass engagement level in the vegan space.

Impact 2
For companies: scientific consumer research will give clear understanding of consumer needs in an already developed market for meat/dairy alternatives, giving the industry clear perspectives on how to improve on ingredients, labelling, taste, and other central product properties. The data generated will be used for positioning retailers and **products for the wider vegan interests in society**, i.e. where to get information on the products, about a vegan delivery service, sourcing supermarket food, restaurant food etc.

Impact 3
For consumers: **fostering a more healthy and sustainable diet** by enabling informed choices of vegan/vegetarian products that are tasty, easily available, and come at the right price point.

PARTNERS

- 011 - CSIC
- 012 - Döhler
- 032 - Institute of Animal Reproduction and Food Research
- 045 - University Hohenheim
- 047 - University of Turin
- 099 - University of Aarhus
- 104 - Danone Research

Increasing consumer trust and support for the food supply chain and for food companies



4. COMMUNICATION

Year - 2020

Total cost of the project - 968.962 €

EIT Funding to UniTo - 77.994 €

Segment - **Grand Challenges**

Activity leader - **Bennet, M (Richard) | University of Reading |**

UniTo's Role - **Partner**

Contact Person - **Anna Miglietta**

Department involved - **Psychology**

PUBLIC ACTIVITY DESCRIPTION

This consumer-focused project will work with consumers, food companies and other stakeholders (industry bodies, non-governmental organisations, regulatory authorities and policy makers, media) across 6 countries in Europe and Israel to co-create and implement selected measures undertaken by food companies, food industry and others to engender both **greater consumer trust in food** and greater **support for food companies and other food chain actors**. It will provide **forums** and a **platform** to allow consumers to voice their concerns and wishes regarding trust in the food they eat and in the companies and others involved in the provision of that food.

These forums and platform will enable consumers and food industry representatives to directly debate those issues and to explore co-design of a series of initiatives for food companies to implement according to consumers' needs which will both increase their trust in food and their support for the companies and organisations involved. The project will make use of previous and current work on consumer trust within EIT Food (e.g. from TrustTracker®) and external to it and learn from food-related consumer conversations across social media. Lessons learnt will be communicated widely and successful initiatives (as assessed by consumers) will be publicized and rolled out by food companies and organisations more widely. Consumers will drive the process at each stage, from voicing concerns and co-design of initiatives to evaluation of success.

ACTIVITY PURPOSE

The ultimate aim of the project is to engender greater consumer trust in food, the food supply chain and its actors, and to increase support for food organizations and their activities. This will be achieved by undertaking a series of activities according to a well-tested approach, called Relate (Money et al 2012, 2017) which was developed by Henley Business School in the UK and has been used successfully with a range of companies and industries including Unilever, Shell, the John Lewis Partnership and others. The outcome will be:

1. the provision of a **sustainable platform** for continued consumer and food industry communication and engagement
2. a comprehensive **profiling of consumers** concerns and wants **in relation to trust**, together with a mapping of food industry and broader stakeholder perspectives
3. consumer-centric **co-design** of innovative but practical ways of increasing consumer trust and support across the food chain
4. uptake and implementation of these measures by a range of food organizations across 6 countries in Europe and Israel
5. comprehensive evaluation of their success
6. communication of lessons learnt and successes through **case study** narratives and messaging
7. roll out of successful interventions more widely across food industry.

The benefits will include:

1. enhanced engagement and **communication** between **consumers and food industry** beyond that currently achieved
2. a series of innovative, practical, **consumer-driven interventions** to improve consumer trust and support of food industry.

The project will consist of ten stages:

1. A consolidation and **analysis of existing information** in relation to consumer trust in food, and a stock-take of existing initiatives by food industry to engender greater trust and support;
2. Giving consumers a voice and an opportunity to be listened to via a number of vehicles including a **purpose-built communications platform**, focus groups, consumer panels and crowd ideation
3. Identification and mapping of all **groups/stakeholders involved** (including NGOs, regulators, food industry bodies, media) and the issues they identify in relation to consumer trust in food;
4. Putting **consumers and food companies/stakeholders in touch** through open and mediated physical (e.g. workshops) and internet-based forums;
5. Identifying **gaps between consumers and food industry**/other stakeholder perspectives and concerns;
6. Bringing consumers and food industry together to co-design innovative initiatives to **increase consumer trust and support** (with an EIT Food competition for most innovative initiative);
7. Identification of short list of best initiatives;
8. Implementation of initiatives within food companies (5 partner companies initially then expanding to 20+)
9. Monitor and evaluate performance – improve initiatives where needed;
10. Communication and roll out to wider food industry.

Public and food industry communication will run throughout the project with media involvement.

EXPECTED OUTCOMES AND IMPACT

Highly publicized food contamination and authenticity scares have led to consumer concerns over the complexity, safety and transparency of the food system. There is a need to build consumer trust by **empowering consumers to engage with the food industry** to address consumer concerns and co-design initiatives implemented by food companies which increase consumer trust and support for food companies. Consumers must be at the heart of this process as partners of the collective stewardship of the food system. The communication project outlined here will provide a vehicle for this process.

Through a range of integrated and consumer-focused activities, the project team will undertake a thorough engagement and consultation phase in 2020, in order to identify stakeholder needs and perceptions, as well as previous/current initiatives. It will further identify key gaps in, and priorities for, action by food companies. The project will be consumer-led to co-design and implement a number of responsive, consumer-driven work programmes over a three-year period which will result in the adoption of innovative measures by food companies to engender greater consumer trust and support.

By the end of 2020, the project will have facilitated the co-design of a number of **practical measures integrated into five company work programmes**, with further development and roll out of implementation activity taking place in both 2021 and 2022 involving a wider group of (20+) food companies and with planned involvement of the Rising Food Star Association and its members. The project will ensure widespread publicity of the co-creation, implementation and success of initiatives, including promotion by food company and food media champions.

PARTNERS

006 - Universidad Autónoma de Madrid
007 - AZTI
011 - CSIC
016 - EUFIC
020 - Grupo AN
030 - PepsiCo
034 - Queen's University Belfast
039 - Sodexo
040 - Strauss Group
042 - Technion
044 - University of Helsinki
046 - University of Reading
047 - University of Turin
048 - University of Warsaw
050 - VTT Technical Research Centre of Finland
509 - DouxMatok



Year - 2019

Total cost of the project - 129.880 €

EIT Funding to UniTo - 60.643 €

Segment - **Citizen Participation Forum (infrastructure)**

Activity leader - **Pera, R (Rebecca) | University of Turin (UniTo) |**

UniTo's Role - **Coordinator**

Contact Person - **Rebecca Pera**

Department involved - **Management**

PUBLIC ACTIVITY DESCRIPTION

Building **consumer food-related trust** is very timely and necessary, not only for a better fulfilling of consumers' needs and concerns, but also for the creation of an ecosystem able to provide responses to food crises and food science innovations in the best interest of European citizens. Co-creating the key pressing themes with consumers, as well as potential interventions and solutions, will facilitate the trust-building process. Trust4Food is a path to engage consumers with the issues of trust and its antecedents and consequences, transparency, accountability, and responsiveness of the EU food system.

The aim of the proposed project is to better understand the **meaning of trust**, the **key drivers** underpinning current trust levels and their diverse outcomes. This understanding will be gained by generating debates around the most pressing issues emerging from the EIT Food Trust Tracker.

ACTIVITY PURPOSE

Trust4Food aims to:

1. contribute in driving consumers awareness, engaging citizens in defining **what trust means in the food system**
2. understand the **drivers of food consumer** trust/mistrust among the food chain
3. discuss the **"good reasons of distrust"**
4. suggest the most efficient interventions to **overcome distrust**
5. rebuild **confidence** in the entire food system by providing consumers with a **truthful and transparent source** for food information.

EXPECTED OUTCOMES AND IMPACT

The project activities will **enable consumers to voice** their views and to engage in a dialogue about their needs, beliefs and concerns with regard to food. Italian, Spanish and UK consumers, indeed, can be considered key representative stakeholders to **encourage trust in the EU food system**, due to their high level of distinctiveness, biodiversity and innovation in food culture. A thorough understanding of the meaning that consumers from different EU countries attribute to "trust" in the food value chain will have an impact on both the food chain actors and national and EU policy-makers to better build a climate of mutual trust through the implementation of appropriate policies.

The issues addressed by Trust4Food are all of direct public policy relevance who play a key role in enhancing trust to **allow food-related innovations** to flourish. Functional foods can enhance public health; new technologies could provide more socially optimal allocations of scarce resources, reducing food waste for example; environmental labelling may encourage more sustainable purchasing, reducing environmental impacts. However these positive innovations rely on consumers' acceptance of them.

The underpinning element for these individual, collective and societal positive innovations is the existence of **trust**, which plays a key role in **influencing consumer acceptance of new foods**, food production attributes or technologies. Trust can ameliorate risk perceptions in the presence of scientific uncertainty about a technology or products. By exploring the key drivers and deterrents of trust combined with new ideas derived from consumers and implemented in a consumer - food system bidirectional discourse, Trust4Food impacts the food system's transparency and integrity.

The output will be disseminated by the team members through academic and non-academic writing, educational programmes and public engagement events, and academic conferences.

PARTNERS

007 - AZTI

046 - University of Reading

047 - University of Turin



5.

EIT REGIONAL INNOVATION SCHEME

EIT Food RIS Solutions



5. EIT REGIONAL INNOVATION SCHEME

Year - 2019

Total cost of the project - 133.961 €

EIT Funding to UniTo - 15.083,75 €

Segment - EIT RIS Action Line 1

Activity leader - Mielniczuk, BM (Bartek) | Maspex |

UniTo's Role - Partner

Contact Person - Dario Peirone

Department involved - Law

PUBLIC ACTIVITY DESCRIPTION

EIT Food RIS Solutions is aimed at engaging students groups with multi-disciplinary backgrounds, from RIS countries and of all educational levels, to work jointly on problem cases **responding to agri-food challenges in RIS countries**. Developing industrially relevant solutions for a period of 4 months students will be supported in their activities by both academics and professionals and will also receive coaching and mentoring services about IPR issues. Selected students groups will present the results of their activities (i.e. a food prototype, a new solution, a business model) in "Food Marathon - Foodhatons". The Foodhaton will enable students to improve proposed food solutions through learning-by-doing activities, intensive collaboration with peers and consultations with main stakeholders/users. Two Foodhatons will be organized in 2019 and they will serve as a **catalyst for the creation of sustainable and tangible solutions to real challenges** by innovative and talented students.

ACTIVITY PURPOSE

EIT Food RIS Solutions is aimed at engaging **students of all educational levels and with different backgrounds to work jointly on industrially relevant solutions addressing agri-food problems identified in RIS countries**. Students will be supported in their learning-by-doing activities by academics and professionals as well as benefit from collaboration with peers. They will have opportunity to present their food prototype, new process solution or food business model in "Food Marathon_Foodhaton".

EXPECTED OUTCOMES AND IMPACT

EIT Food RIS Solutions will have the following outcomes and impacts:

- increasing cross-functional competences as well as development of practical skills and gaining diverse experience
- students from RIS countries with different background (scientific and business) will learn a **holistic, entrepreneurial approach** to industrial and societal challenges **in the agri-food sector**
- increasing competences and skills related to cooperation in international environment as well as to gaining a better understanding of new product and business development processes
- creating active **cooperation platform between students from RIS countries and EIT Food/ EIT Food Partners**
- strengthening the innovation capacity of EIT RIS stakeholders, especially students, to enable them to become future KIC partners, widening the participation in EIT Food activities (RIS Expert Community, RIS Fellowships, x-KIC bootcamps, RIS Demo Days, RIS Innovation Grants, Sprout, EIT FAN)
- promoting the innovation agenda of EIT Food through proposing and **developing innovative food solutions** related to EIT Food challenges
- sharing good practices and experience of EIT Food Partners with students at all educational levels to **reduce** the innovation and knowledge **gap between R&D performers across Europe**
- identifying good profiles in diverse RIS regions which will help to start building a **"RIS of creative citizens database"** to collaborate and co-create food innovation with consumers
- contributing to job creation and economic **development of targeted EIT RIS countries**.

PARTNERS

003 - AIA
007 - AZTI
026 - Maspex
032 - Institute of Animal Reproduction and Food Research
047 - University of Turin
048 - University of Warsaw
057 - CLC North-East
061 - CLC South

CHAMPP: Contemporary challenges and issues of the poultry production sector



5. EIT REGIONAL INNOVATION SCHEME

Year - 2019

Total cost of the project - 70.000 €

EIT Funding to UniTo - 15.500 €

Segment - EIT RIS Action Line 2

Activity leader - Fotschki, J (Joanna) | Institute of Animal Reproduction and Food Reasearch (IARFR PAS) |

UniTo's Role - Partner

Contact Person - Achille Schiavone

Department involved - Veterinary Sciences

PUBLIC ACTIVITY DESCRIPTION

The aim of the SME workshops is to **identify contemporary challenges and solutions in poultry industry** dedicated to feed manufacturers, advisors, farmers and employees in poultry factories, as well as managers responsible for the strategy and profitability of fodder and poultry production, all from RIS-eligible regions. There is a need to highlight at the national and international level current challenges in this sector by providing support to SMEs through knowledge transfer in e.g. improvement of **competitiveness**, building a **trend-driven culture**, creation of **high quality products** adjusted to consumer needs, **promoting health-oriented products** and encouraging to use available local resources. The qualified specialists from Germany, Poland, Italy, United Kingdom and the Netherlands will be invited to share knowledge during SME workshops, which will be held in RIS regions of Poland, Lithuania, Italy and Hungary.

ACTIVITY PURPOSE

SME workshops will be held in RIS regions to identify contemporary challenges in poultry industry. Manufacturers and local poultry producers from underprivileged regions will obtain knowledge on transferable solutions that will help to improve competitiveness of their business. The project will **benefit RIS-eligible stakeholders within the poultry industry** in the light of current regulations, promoting health-oriented products and encouraging the use of available local resources.

EXPECTED OUTCOMES AND IMPACT

4 SME Workshops "CHAMPP: Contemporary challenges and issues of the poultry production sector" will be held in RIS-eligible regions of Poland, Italy, Lithuania and Hungary (in 4 locations will be organized 1 activity) during 2019 with the main impacts, in short- and long-term, being as follows:

- Improvement of knowledge transfer and **education of participants in the poultry sector**
- Enhancement of **sustainability of the European poultry sector**
- Support and stimulation of **dialogue between SMEs, poultry related industry and research** in Europe
- Extension of the impact of research and innovation related to the poultry sector in Europe
- Presentation of new opportunities for SMEs improving competitiveness, stimulating trend-driven actions and promoting the creation of export products.

CHAMPP workshops organized by leaders in poultry production sectors are directed to **feed manufacturers, advisors, farmers and employees in poultry factories**, as well as managers responsible for the strategy and profitability of fodder and poultry production. The workshops will benefit stakeholders in RIS countries who are not KIC partners, by providing them with mentoring and help that will facilitate the effective adoption of KIC KTI practise to local reality of RIS regions.

The project addresses EIT Food RIS strategy objectives: RIS-SO3: Promote the **convergence of stakeholder networks in EIT RIS areas and other European countries**, linking regions of Europe with diversified innovative potentials and stimulating cooperation between the existing and upcoming innovation leaders and thus creating an interconnected, pan-European food system, drawing on the strengths of supply chain participants from various countries and regions (...), and RIS-SO5. **Catalyse entrepreneurship and innovation** across the food system in EIT RIS countries, with particular focus on the potential of start-up companies and entrepreneurial talents, which contribute to the regional and national developments.

PARTNERS

032 - Institute of Animal Reproduction and Food Research

034 - Queen's University Belfast

045 - University Hohenheim

047 - University of Turin

523 - InOvo

Growing Consciousness: RIS Challenge project aimed at revitalizing agro-food chains in rural areas through sustainable innovation



5. EIT REGIONAL INNOVATION SCHEME

Year - 2020

Total cost of the project - 487.840 €

EIT Funding to UniTo - 105.000 €

Segment - EIT RIS Challenge

Activity leader - Bonato, BL (Laura) | University of Turin (UniTo) |

UniTo's Role - Coordinator

Contact Person - Laura Bonato

Department involved - International Languages and Literatures and Modern Cultures

PUBLIC ACTIVITY DESCRIPTION

Our objective is to produce a set of activities (summer schools, focus groups, professional workshops, stakeholders and community meetings, business creation support), which will foster skills, techniques and know-how aimed at **revitalizing the cultivation of ancient/almost vanished varieties of cereals, medicinal plants and aromatic herbs in rural areas across RIS countries** in Southern and Eastern Europe in a sustainable way.

The activity aims at bringing knowledge about sustainable innovative farming techniques as well as on innovative tools and machinery for agriculture digitalization and production yield increase, from EIT Food partners companies and Rising Food Stars to agro-food sector professionals in RIS countries.

ACTIVITY PURPOSE

The objective of our proposal is to produce a set of activities (summer schools, focus groups, professional workshops, stakeholders and community meetings, business creation support) which will **foster skills, techniques and know-how** aimed at revitalizing the cultivation of ancient/almost vanished varieties of cereals, medicinal plants and aromatic herbs in rural areas across RIS countries in Southern and Eastern Europe in a sustainable way. Examples of such cereals, plants and herbs are rye, spelt, einkorn, emmer, Khorasan wheat, freekeh, bulgur; millet, barley, sorghum; amaranth, buckwheat; lavender, hemp, sage, wild thyme (thymus serpyllum), genepi (ligustrum mutellina), gentian, juniper.

They could be a valuable source of diversified vegetables for European food industry and additionally they could represent a similarly valuable source of raw materials for other industries (nutraceuticals, pharma, cosmetic, textile, packaging). The objective will be reached through a series of educational activities directed to fill the existing know-how gap (at technical, business and logistic level) between mainstream agricultural entrepreneurship, typical of large intensive production flatland areas, and rural areas agriculture characterized by fractionated small-cultivated areas, often in mid-mountains or hillside slopes, with niche production of local varieties. The activities aims also at **bringing knowledge about sustainable innovative farming techniques**, as well as on **innovative tools and machinery for agriculture digitalization** and production yield increase, from EIT Food partners companies and Rising Food Stars to agro-food sector professionals in RIS countries. The ground on which the project leans is the promotion of innovation in the agro-food sector in RIS countries based on the **increase of biodiversity in agriculture cultivated varieties**, the **pursue of sustainable production** and the promotion of a value chain that could give more emphasis and acceptability to life and work in European rural areas.

The ambition is to train farmers who wish to continue to live and work in rural areas and to add value to the food chain by introducing **innovative farming of ancient/traditional crops** that could be the basis of new or renovated edible products in Europe or give raise to side stream exploitation and local industry growth. Targeted countries are in first year Spain, Italy and Poland. In the second year the program could be spread in other RIS countries (i.e. Greece, Portugal, Slovakia...).

EXPECTED OUTCOMES AND IMPACT

The basic idea of the project is to encourage the adoption of innovative tools and technologies in rural areas of RIS countries with the aim of enabling producers in these areas to make the **cultivation of ancient crops and/or local varieties compatible with modern techniques**. We aim to train the entrepreneurial/administrative/educational ecosystem **towards advanced entrepreneurial tools** that have not been tested in those contexts. The objective is to provide small-scale producers in rural areas with training and cultural tools to produce cereal and non-cereal crops in a technologically advanced and sustainable manner. At the same time experimenting new business models and ways of shortening the value chain.

The activities are planned to produce a **virtuous circle connecting education, innovation and business creation** through the innovation of rural farming towards a value chain, which includes the principles of sustainability and biodiversity. It is expected to have a sound impact of rural farming innovation in RIS regions also through the promotion of active networking and new business creation.

The expected outcomes will be:

- educating on food chains and on engagement on **sustainable ways of producing culture on cultivations**
- promoting and testing of cultivations fostering a cultivation-use-divulgate-innovation circle
- critically assessing the impact of food on environment, climate change and health, specifically for local communities
- increasing knowledge of what good practices are
- involving **different stakeholders**: students will be involved as they are a resource for future action-making;
- small entrepreneurs will be involved because they play a pivotal role in **promoting quality factors in their own business in rural areas**
- local policymakers will be involved as they can bridge the needs of local entrepreneurs, territorial development policies oriented towards the needs of rural areas dwellers and of other social actors.

PARTNERS

020 - Grupo AN
026 - Maspex
032 - Institute of Animal Reproduction and Food Research
041 - Technische Universität München
047 - University of Turin
057 - CLC North-East
061 - CLC South
550 - Agricolus

RIS Challenges - New technologies implementation in RIS regions' olive oil mills for healthier olive oil extraction



5. EIT REGIONAL INNOVATION SCHEME

Year - 2020

Total cost of the project - 488.375 €

EIT Funding to UniTo - 96.499 €

Segment - **EIT RIS Challenge**

Activity leader - **Gomez Rodriguez, PGR (Pablo) | ACESUR |**

UniTo's Role - **Partner**

Contact Person - **Giancarlo Cravotto**

Department involved - **Drug Science and Technology**

PUBLIC ACTIVITY DESCRIPTION

Virgin olive oil, mainly due to their minor components, is one of the most powerful weapons to **prevent prevalent modern diseases in RIS regions**, such as Metabolic Syndrome (one of the most prevalent diseases in RIS regions). This project will incorporate new physical technologies in the extraction process in order to produce oils with a higher amount of those minor components with higher preventive effects such as polyphenols and tocopherols, without external supplementation. This will allow using the EFSA claim for polyphenols, for which requirements are so high that only a few varieties of olives cultivated on specific environments are able to archive.

The project will be implemented across 4 RIS regions, with the technologies implementation, local olive oil producers from RIS regions selected in open call, will be able, not only to improve the extraction process of olive oil, but also to **achieve the minimum level of polyphenols to label it and to sell a higher value-added oil**.

Additionally, selected producers will be educated in the advantages and uses of the new technology, they will have access to toolset, training methodology and expert support from EIT food partners and will allow them to implement new technology in their market. Furthermore, consumers will be engaged from the creation of the new oils by the panel test tool and the validation of the final product building trust and confidence in the food system.

ACTIVITY PURPOSE

One of the biggest challenges in RIS countries is the late adoption of innovative solutions and technologies especially in SMEs companies within the agrifood sector. This Project combines the partners' expertise in the olive oil sector and the implementation of three different innovative techniques: hydrodynamic cavitation, ultrasound, and pulsed electronic fields (PEF) technology. The aim is to increase the presence of compounds as **tocopherols, polyphenols and other bio-active compounds on olive oil which have a proven positive effect on cardiovascular diseases and Metabolic Syndrome** (highest prevalence across RIS countries). It will involve 4 SME from RIS regions (Portugal, Spain, Italy and Greece) where the production of olive oil is highly relevant for their economies. An educational program will also be executed and benefit 60 producers in RIS regions which are not yet KIC partners, by providing them with toolsets, training and expert support to adapt and implement the innovative solution, encouraging them to develop the latest innovation in the olive oil sector (one of the most traditional).

Results:

1. The project encourages local companies to introduce **innovative technologies** from the point of view of art's state. It will improve the olive oil extraction process' performance, helping producers to be far more productive and deliver a healthier olive oil, **providing olive oil mills** from RIS regions with a competitive advantage fulfilling the EFSA claim about Polyphenols levels. This will increase producers' long-term productiveness and reduce the payback of upgrading their mills. Its application will stimulate and facilitate the growth of the food sector and local companies, as well as favour job creation.
2. The educational programme will push **collaboration between startups, academy, incumbent SMEs and local producers**. Olive oil producers will be more aware of the importance of delivering healthier products and innovate. New knowledge and skills in this sector are crucial to raise the innovativeness and to improve the competitiveness of RIS regions in the agrifood sector.

3. Involving consumers is also essential in order to improve trust and **confidence in the food system**. The shelf-life study will include mathematical analyses on organoleptic, physicochemical characteristic and minor organic compounds' results and develop a predictive model of minor compound behaviour. It also will involve consumers on the organoleptic evaluation and sensory panel tests.

Project phases: 2020 Lab-scale, 2021 Pilot development, and 2022 Industrial scale-up.

Task 1 - Project Management;

Task 2 - New technologies requirements compilation, study and tests;

Task 3 - Extracted olive oil physical-chemical and organoleptic parameters evaluation;

Task 4 - Olive oil shelf-life and mathematical predictive modelling. Packaging improvements study;

Task 5 - Study of economic and commercialisation feasibility of the technologies; Task 6: Professional Educational Program.

EXPECTED OUTCOMES AND IMPACT

This activity has in focus to tackle the investigation and development of an innovative technology that could be used in the production of olive oil with the main **aim of delivering a healthier olive oil to consumers**. This ambitious goal entails three crucial hurdles: making the technology not only functional but also profitable, ensuring that it produces the olive oil with the best composition and organoleptic properties and educate stakeholders about the advantage of the technologies and the necessity of the project by conveying the urgency of innovating in the olive oil industry.

The vast majority of olive oil producers are located in RIS regions which neither have a proactive attitude to innovation nor enough capital to investigate. Thanks to the results of our Project we will be able to apply innovative techniques through which the industry is going to deliver far healthier olive oil to consumers and **increase the productiveness and profitability of the sector**.

Additionally, olive oil mills along RIS regions would be able to respond to both EFSA health claims for olive oil polyphenols and demand from other high-value new markets (EE.UU., Japan or China). Consequently, European olive oil producers will boost their competitiveness. The expected impact is going to be huge both in terms of business and job creation. On the one hand, the **new processing technologies** will create a niche for entrepreneurs as producers will definitely need some help in the **innovation adaptation and possible future improvements**. Evenly, the adaptation of our innovation to other industries. On the other hand, the upselling opportunity offered by our development will signify a direct SMEs need for qualified personnel. On the other hand, part of the budget grant by EIT Food will be a direct economic impact on RIS regions as part of the tasks will be outsourced in RIS' enterprises and through the workshops, and these activities will be as well networking opportunities for the attendants.

PARTNERS

- 002 - ACESUR**
- 011 - CSIC**
- 017 - Fraunhofer**
- 047 - University of Turin**
- 061 - CLC South**
- 511 - Energy Pulse Systems**

6.

.....
CROSS-KIC



Human Capital



6. CROSS-KIC

Years - 2018/2019

Total cost of the project - 243.500 €

EIT Funding to UniTo - 55.051,25 €

Segment - **Cross-KIC Human Capital**

Activity leader - **Van Der Kamp, M (Marteen)**

| EIT Food |

UniTo's Role - **Partner**

Contact Person - **Alberto Borraccino**

Department involved - **Sciences of Public Health and Pediatrics**

PUBLIC ACTIVITY DESCRIPTION

The Cross-KIC Human Capital Activity is fully devoted towards increasing the values of the EIT education performed in the different KICs in full collaboration with the EIT HQ. It is related to the **long-term impact of the EIT education of the European work-force and its citizens**. It aims towards modernization of the education in Europe, increasing the innovation and entrepreneurial spirit of learners in, and for, Europe, with a **student-centered education approach** in an aligned teaching mode. The activity is directed mainly towards higher education, but significant efforts are also made towards professional training as well as bringing an EIT-directed learning approach towards schools, and pupils. The activity covers also the extension of the EIT-Label to smaller modules, a common EIT delivery mechanism and a learning analytics approach, first of all on the concept level but also with first implementation.

ACTIVITY PURPOSE

This activity describes a common Cross-KIC educational effort to leverage individual KICs strength in entrepreneurial education to create a **Human Capital capable of advancing Europe socially and economically**.

EXPECTED OUTCOMES AND IMPACT

The Cross-KIC Human Capital Activity has as main, global objectives to:

- Spread the **knowledge about the EIT educational products** to a wider audience
- Ensure a coherent, combined and **common view of delivery mechanisms for the educational products** within the EIT-sphere
- Create EIT-internal **awareness of the powerful tools** available with appropriate learning analytics
- Show examples, and best-practices, of **challenge-based learning** towards societal well-being.

PARTNERS

001 EIT Food IVZW
047 University of Turin
059 CLC North-West

Bilateral Innovation call in collaboration with EIT Health: Food for Health



6. CROSS-KIC

Year - 2019

Total cost of the project - 490.855 €

EIT Funding to UniTo - 7.500 €

Segment - **Cross-KIC Human Capital**

Activity leader - **Lee, YML (Yu-Mi) | EIT Food |**

UniTo's Role - **Partner**

Contact Person - **Paola Costelli**

Department involved - **Clinical and Biological Sciences**

PARTNERS

007 AZTI
024 KU Leuven
030 PepsiCo
045 University Hohenheim
046 University of Reading
047 University of Turin
058 CLC Central
060 CLC West
104 Danone Research
549 OME Health

PUBLIC ACTIVITY DESCRIPTION

Collaboration with EIT Health to integrate activities in the cross-KIC area of Food and Health so as to create new innovation and business opportunities and **bolster the societal and economic impact of EIT**. Establish a shared platform for integrated activities throughout the knowledge triangle.

ACTIVITY PURPOSE

Stimulate innovation and the creation of **new and added value products in the cross-sector Food and Health**. Design a strategy for public engagement in personalised healthy diets and make tools available that facilitate self-management. Develop new nutrition products and services aimed at **personalized health**. Set up a **joined communication plan** aimed at the KIC-partnerships, the external stakeholders, policy makers, media and the general public. Stimulate **entrepreneurship** in the cross-KIC sector.

EXPECTED OUTCOMES AND IMPACT

Expected results and (long-term) impact:

- New **nutrition-and food-related products and services for clinical applications** (e.g. in cancer treatment, pre-operative procedures)
- Validated tools (e.g. apps, devices, education programmes) become available to the general public
- A spur of entrepreneurial activity in and new **alliances between companies from the food and healthcare sectors**
- Increased (out of pocket) **spending on "healthy nutrition"** associated products Evidence for reduction of metabolic syndrome and malnutrition in extended test cohorts
- Broad **support from governments, health insurance, public bodies** etc. for a European food and health initiative incited by the joint-KICs.

Editing: UniTo EIT Food Support Office (eitfood@unito.it)

Impaginazione: UP Comunicazione Istituzionale e Organizzativa



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