European Food Safety Authority

EU RAA Catalogue of Project Ideas

Ideas for first joint projects under the EU Risk Assessment Agenda

November 2016

The following catalogue includes ideas for first joint projects under the EU Risk Assessment Agenda (EU RAA). Advisory Forum (AF) members, assisted by Focal Points and in consultation with the Article 36 organisations in their country have gathered project ideas, proposed either as a leading or interested party.

The aim of this exercise was to establish a catalogue of EU RAA project ideas by the end of 2016 to be able to initiate projects in 2017 stimulating interests among Member States to collaborate. After December AF meeting a catalogue of project ideas will be circulated to AF members to register their interest in participating.

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EU RISK ASSESSMENT AGENDA

CONCEPT PAPER

Introduction

While the term EU Risk Assessment Agenda (EU RAA) is new, Scientific Cooperation between EFSA and the Member States has been developing for many years, with a basis in the Founding Regulation, Regulation (EC) No 178/2002, which lays down the establishment of EFSA and procedures in matters of food safety. The basis and scope of scientific cooperation is described in a number of its recitals (40, 44, 51, 53, 55) and Articles (22, 23, 24, 27, 30, 36). The Regulation places a number of obligations on EFSA and Member States to cooperate closely to enable EFSA to carry out its mission.

Thus Cooperation with partners in Member States and internationally has been paramount since EFSA's inception. However, in drawing conclusions from the EFSA external evaluation conducted in 2012, the Management Board recommended that EFSA enhance EU risk assessment capacity by cooperating with Member States in relation to planning EU work in areas within its remit, to enable better priority setting and more efficient and effective use of resources.

A number of mechanisms existed or have been developed over recent years which aid scientific cooperation, including the Advisory Forum (AF), Focal Points (FP) and Scientific Networks (SN), the Article 36 organisation network, the information exchange platform and training on risk assessment, such as BTSF. Over the years, a number of strategic papers have been developed providing direction to scientific cooperation[1],[2],[3].

EFSA's Strategy 2020[4] identifies cooperation as a key EFSA's value: *Working together and exchanging knowledge between food safety experts ensures excellence and efficiency and maximises Europe's risk assessment capacity and potential. We believe that the whole of food safety expertise is greater than the sum of its individual parts.*

To contribute to the objectives of the Strategy, EFSA has commenced the development of a framework process for initiating joint projects with Member States (and other partners) on topics that are agreed as being priorities. This is the basis of the EU Risk Assessment Agenda which will be on ongoing activity in the coming years.

Background

The concept of the EU RAA is that it will set out common priorities with the Member States that can be addressed through specific joint projects; planned and resourced through EFSA's working programmes, national programmes and/or through other means with transparent, coordinated and collaborative way.

The risk assessment support activities to be included under the EU RAA:

- Are collaborative in nature, benefitting from input by more than one partner and considered priorities for EFSA and MS

[1] Strategy for Cooperation and Networking between the EU Member States and EFSA (2006).

[2] Technical Report of EFSA on Scientific Cooperation between EFSA and Member States: Taking Stock and Looking Ahead (2011). http://www.efsa.europa.eu/en/corporate/pub/mediumtermplanning.htm

[3] Scientific Cooperation Roadmap 2014-2016, http://www.efsa.europa.eu/sites/default/files/corporate_publications/files/scientificcooperationroadmap1416.pdf

[4] EFSA Strategy 2020 http://www.efsa.europa.eu/sites/default/files/151008.pdf

- Can be a *thematic area*, addressing risk assessment support in general or a *key topic*, addressing a collaborative action concerning a single issue or hazard
- Are new activities that support risk assessment or mid to long term nature not yet fully covered in existing work programmes

In 2014 the Advisory Forum agreed to establish a Discussion Group of the Advisory Forum (AFDG) further elaborate the means of identifying and agreeing priority topics for collaboration.

The Terms of Reference for this group were established with the following tasks:

Provide advice and guidance on developing an EU risk assessment agenda in partnership between EFSA and Member States.[5]

At the end of 2014 the AFDG proposed that a Delphi Study should be undertaken to identify the most important food safety topics across Europe. The Delphi study was completed at the end of 2015 and the results published[6]. Discussion Group reconvened to move the Agenda forward with specific actions being proposed. In progressing the EU RAA, action is being considered in 4 pillars:

- **Topics**
- **Process**
- **Engagement**
- **Funding**

Each of these is considered further below.

As the nature of the EU RAA is long term, there is a need for the AFDG to continue to steer the process as outlined in the Terms of Reference. However as considerable time has passed since the original Terms of Reference were agreed and there have been a number of changes to representatives in the Forum and hence the AFDG, it would be appropriate for the mandate from the AF to be renewed.

Methodology

Topics

The Delphi study took the form of three rounds of surveys involving over 200 independent experts from countries across the EU. The experts were asked to identify food safety priorities and to rate them according to a number of criteria, including their potential for saving resources, the mid to long-term nature of projects, their added value to support risk assessment activities and their potential to improve harmonisation of risk assessment.

[5] Terms of Reference for the AFDG https://dms.efsa.europa.eu/otcs/cs.exe/fetch/2000/8796421/8797392/8797393/11046616/11134108/11134321/TOR_AFWG_EU_RA_agenda.pdf?nodeid=10475894&vernum=-2

[6] http://www.efsa.europa.eu/en/supporting/pub/1007e

The resulting list derived from the study grouped topics into four domains – chemical, microbiological and environmental risk assessment and nutrition – plus a further category of generic topics that were more cross-cutting (Annex A).

Process

While the Delphi Study was undertaken, other activities continued to work towards the goal of the EURAA in coordinating the risk assessment activities between EFSA and the MS which include visits by EFSA's Executive Director (ED) to Member States where joint projects have been agreed. In addition, from further discussions within the Advisory Forum various projects were proposed under broad headings stimulating interests among members to collaborate. These topics have been collated and included under the Delphi study headings and included in the Annex B along with the respective links to EFSA's Strategy priority topics.

Having established priority areas for collaboration, the need is to initiate actions to contribute further knowledge in the areas.

This is currently being done in an *ad hoc* way through joint projects identified with MS at the time of the Executive Director visiting each country and meeting with the relevant national institutions as part of a three year cycle of programmed visits to stimulate scientific networking.

Since 2015 a new cooperation tool ("Thematic Grants") is making use of the Delphi derived list to identify themes for joint projects.

To further maximise the coordination of activities, Member States, through the Advisory Forum are being recommended to take note of the priorities during the development of annual work programmes and to contribute to national research programme.

Reflecting the range of interests and capacities in the MS, the Advisory Forum should be used as a venue for members to identify one topic of interest that they would take the lead on and invite other members to be part of a cluster of countries which would try to resource and support activities under that heading.

Regular updates would be provided at plenary meetings of the AF with an overview of activities (ideally linked to forthcoming risk assessment activity resource currently used and being further developed).

It is expected that the priorities identified provide a framework for identifying projects over a period of years with not all needing to be addressed at the same time. In some cases no actions under the EU RAA may be possible or appropriate. Because of the long term nature of the task, it is recognised that the topics identified as part of the study also need to be kept under review and the AFDG considered that revisiting the exercise once every five years would be sufficient to achieve this.

Since reconvening, the AFDG has proposed a number of follow up actions:

1. **Members of the Advisory Forum identified topics they would like to lead at the 61st meeting held in September, 2016**
2. **Members to indicate interest on which topics they are willing to support by 63rd Advisory Forum meeting, 7-8 March 2017**
3. **EFSA, supported by Member States, to plan, map and track activities being taken under the EU RAA initiative**
4. **Updates to be included in Agenda for AF meetings from 2017.**

Engagement

Having considered that the priority areas for collaboration could be used in a broader way, the AFDG agreed that EFSA and Member States should steer a wider process of **consultation** on the 28 topics and how to best use the list with other partners to **engage** them in common areas of collaboration and concrete proposals for action. In the 58th AF meeting, the AF agreed that the engagement process could follow a top-down approach, starting from a strategic level, followed by an operational level regarding the implementation. Policy makers should be included in the discussions and the list should be aggregated from both levels with an agreed frequency of updates and consultation.

The objectives of aspect of this process are to:

- **map and plan activities under the different priorities;**
- **support the inclusion of priority areas in work programmes/ research programmes;**
- **identify partners to involve in joint projects;**
- **identify possible funding;**
- **task EFSA or other partners on identified priorities (i.e. Commission, MS)**

The AFDG proposed consulting partners at EU level initially, followed by international partners at a later stage when greater clarity is achieved on how the list could be used.

The partners who will be approached at the 1st stage of the consultation are:

a) at National level (**who: MS**)

   Research Institutions; Art. 36 organisation; competent authorities; regional programmes

b) at EU level (**who: EFSA**):

   - Directorate General for Health and Food Safety (DG SANTE)
   - Other European Commission Services with DG SANTE, including Directorate Generals (DGs) of JRC, R&I, AGRI, DEVCO and Connect
   - Heads of National Food Safety Agencies (HoA)
   - EU Agencies, including EMA, ECDC, ECHA, EEA, EMCDDA, EU ANSA network (bilateral approach)

Partners to be approached in the 2nd stage of engagement:

- NGOs and other stakeholders
- International partners, including International organisations (WHO, FAO, OIE) and countries with experienced risk assessment bodies (USA, Japan, Australia, New Zealand, Canada)
- At a later stage this consultation could be expanded in countries with which EFSA engages with to help them to build capacity in risk assessment

Timelines: At National and EU level the engagement process should commence after the 62nd Advisory Forum meeting and conclude by the 63rd Advisory Forum meeting, 7-8 March 2017. Engagement with International partners, NGOs and other stakeholders will be launched in 2017.

Funding

As regards 'Funding opportunities', the fourth pillar in implementing the EU RAA, it becomes clear that the landscape regarding funding schemes for Risk Assessment (RA) related activities is quite diverse across Europe, hence there will not be a single approach that will fit all. It is therefore important to explore

different
funding opportunities at all levels (international, European, national, and regional) to ensure sustainability of RA activities. As mentioned, speaking with one-voice, having an EU RA agenda with common priorities should help to be heard by potential funders and influence priority setting at national level.

The AFDG acknowledged the work being done by the Focal Point network as a first step in establishing a portfolio of possible funders for each country and at European/ international level by mapping the funding landscape in their countries identifying what is currently available at national, regional and international level.

Once project ideas are material, the project partners may use these funding portfolios to identify possible supporters and submit applications for funding. For smaller projects it may not be necessary to apply for external funding and project partners could start work together using own available resources.

Conclusions

The EU Risk Assessment Agenda should continue to be developed as a framework for initiating collaborative projects which contribute to the risk assessment process in the areas identified and agreed as being priorities between EFSA and the Member States.

The process should be further expanded to engage other stakeholders over a period of time, initially involving the European Commission services and EU Agencies.

To ensure that there is a clear mandate for the work of the AFDG, it is recommended that the Terms of Reference for the group are updated and revised where necessary. This should be done between June and September 2016.

Specific follow up actions have been identified in this paper and it is recommended that these commence as follows:

1. Members of the Advisory Forum to identify topics they would like to lead on

Advisory Forum members are to be requested to review the Annex provided, updating information as necessary and indicating projects they are interested in leading. A project template should be developed by EFSA to capture the relevant information.

Timeline: between June and December 2016

2. Members to indicate interest on which topics they are willing to support

Once the information form members has been collated and the Annex updated, with project leaders identified, AF members are to be requested to show interest in which projects they additionally wish to contribute to.

Timeline from December 2016 to February 2017

3. EFSA, to plan, map and track activities

EFSA will maintain an overview of the activities of Member State, identifying the tools available to support the different activities (primarily through scientific cooperation grants and procurements).

Timeline: From second quarter 2017

4.

Discussions to commence with the European Commission services and EU Agencies as part of the wider engagement process

The primary purpose being to identify further potential partners for collaboration in the priority areas identified and to make recommendations for inclusion in work and research programmes.

Timeline: From March 2016

5. Funding Opportunities be identified

On the funding it is recommended that the information gathered on national, European and international sources of funding be collated and published as stand-alone document.

6. Continued Feedback be provided to the Advisory Forum

As a feedback mechanism, regular updates will be provided to the Advisory Forum from March 2017.

Project ideas under Delphi study priorities

General priorities			
A) Member State priorities identified in Delphi Study	**B) Catalogue of EU RAA Project Ideas**	**C) MS proposing (lead)**	**D) MS interested (involved)**
1. Methods and systems for identifying emerging food risks (e.g. new food-borne diseases)	Identification of emerging food-borne pathogens		**Germany** (BfR)
	Accompanying risk communication activities for the topics of the EU risk assessment agenda and risk perception research		**Germany** (BfR)
	Implementing Network science and Mathematical Modelling Tools into European Food Chain Safety Decision Making	Hungary	**Greece** (EFET) Finland
	Evidence based risk ranking of chemical and microbiological hazards in food	Sweden & Finland	
	Methods and systems for identifying emerging risks Risk ranking of identified emerging risks		Norway
	Methods and systems for identifying emerging food risks (e.g. new food-borne diseases)	Netherlands	
	Development and application of genetic methods for traceability in animal food products	Greece	
	FTRACE – Tracing food additives through a smartphone	Portugal	
	Risk evaluation of herbal food supplements - drug interactions	Portugal	
	Population-based patterns of food acquisition, packaging, preparation and consumption in pregnant women and in 3 months to 6 years-old children	Portugal	

	Integrating social, food and health data to deliver knowledge for the identification of emerging risks along the food chain	Portugal	
	Impact of food intake patterns on antibiotic resistance profile in human microbiome, its antibiotic resistance profile and human vulnerability for infections	Portugal	
	Prenatal and postnatal exposure to food-associated risks: a longitudinal study along infancy and childhood	Portugal	
	Improving targeted risk communication activities and risk perception research for the topics of the EU risk assessment agenda	Portugal	Norway, France and Switzerland as well as The Federal Institute for Risk Assessment (BfR), 2@bfr.bund.de, are potential partner organizations at national or EU level.
	Methods of data mining for food monitoring system	Poland	
	Characteristics of the HAV virus strains found in Poland	Poland	
2. Development of standard risk-benefit assessment methods (of foods)	Development and implementation of Risk-Benefit Assessment in foods	Denmark	
	Health technology assessment (HTA) methodology implementation to evidence-based food safety risk analysis	Hungary	Finland
	Methods for benefit- risk assessment – improving method		Norway
	Risk benefit		Norway
	Accompanying risk communication activities for the topics of the EU risk assessment agenda and risk perception research		**Germany** (BfR)
	Improving targeted risk communication activities and risk perception research for the topics of the EU risk assessment agenda	Portugal	Norway, France and Switzerland as well as The Federal Institute for Risk Assessment (BfR), 2@bfr.bund.de, are potential partner organizations at national or EU level.

	Risk benefit assessment of food fortification and dietary supplement intake	Portugal	
	Collaborated membership of Baltic state countries on the method development and application for chemical analysis and risk assessment of emerging mycotoxins: studies of public health and economic benefits of national agricultural products and market demanded foodstuff.	Latvia (Lithuania, Estonia)	
3. Common data collection/ surveillance scheme	Further steps towards integration of data from total diet studies in dietary exposure assessments		Germany (BfR)
	NextGen Food Safety Knowledge Integration Framework	Germany	Sweden, Denmark, Hungary, Norway, Spain, Greece, France, UK
	Data compilation of pesticide processing factors		Germany (BfR) Netherlands (RIVM), Poland (NIZP-PZH)
	Implementing Network science and Mathematical Modelling Tools into European Food Chain Safety Decision Making	Hungary	Greece (EFET), Poland (NIZP-PZH)
	Biology and control of some exotic, emerging and transboundary vector-borne and zoonotic diseases in Bulgaria and Germany with emphasis of veterinary and public health importance	Bulgaria	As interested party: Risk Assessment Center on Food Chain, Bulgaria in collaboration with High Veterinary School in Hannover, Germany, other potential partner organizations at national or EU level: TBD
	DNA database construction of Greek dairy animal local breeds	Greece	
	Pilot study regarding the occurrence of heavy metals in processed foods and the use of suitable conversion factors	Greece	
	Improvement and monitoring of the food products nutritional quality: promote reformulations on fat, sugars and salt	France	RIVM_Netherlands, IBEC_Irish, AGES_Austria, BBU_Romania

	Quality of edible insects produced under European rearing conditions	Czech Republic	
	The fate of cholesterol in thermally processed meat food and monitoring of oxysterols formation	Czech Republic	
	Dietary exposure assessment of chemical contaminants	Portugal	Finland
	Development of a monitoring and transmission system of exposure data to food additives in specific groups of population	Portugal	
	Development of a foodborne outbreak monitoring system and data transmission	Portugal	Finland
	Integrating social, food and health data to deliver knowledge for the identification of emerging risks along the food chain	Portugal	
	Risk assessment of exposure to multiple mycotoxins (mixture of aflatoxins and ochratoxin A and mixture of deoxynivalenol and zearalenone) in children and young people	Portugal	
	Risk benefit assessment of food fortification and dietary supplement intake	Portugal	
	Urinary metabolomic profile – a path to discover novel biomarkers of dietary exposure	Portugal	
	Collaborated membership of Baltic state countries on the method development and application for chemical analysis and risk assessment of emerging mycotoxins: studies of public health and economic benefits of national agricultural products and market demanded foodstuff.	Latvia (Lithuania, Estonia)	

	Methods of data mining for food monitoring system	Poland	
4. Multiple contaminant impacts on the risk profile of foods			Italy
	The Risk assessment of raw food diet – the impact of increased consumption of nuts and dried fruits (containing aflatoxins) on health	Slovenia	
	Population-based patterns of food acquisition, packaging, preparation and consumption in pregnant women and in 3 months to 6 years-old children	Portugal	
	Risk assessment of exposure to multiple mycotoxins (mixture of aflatoxins and ochratoxin A and mixture of deoxynivalenol and zearalenone) in children and young people	Portugal	
	Collaborated membership of Baltic state countries on the method development and application for chemical analysis and risk assessment of emerging mycotoxins: studies of public health and economic benefits of national agricultural products and market demanded foodstuff.	Latvia (Lithuania, Estonia)	
5. Risks/benefits of botanicals/herbals in food supplements	Risk/benefit of botanicals/herbs in food supplements	Germany	Denmark (DTU Food) and France (ANSES)
	Accompanying risk communication activities for the topics of the EU risk assessment agenda and risk perception research		**Germany** (BfR)
	Study of the toxicity/beneficial role of bioactive natural compounds	Greece	

	The safety of hemp in food and food supplements	Slovenia	
	Risk evaluation of herbal food supplements - drug interactions	Portugal	
	Improving targeted risk communication activities and risk perception research for the topics of the EU risk assessment agenda	Portugal	Norway, France and Switzerland as well as The Federal Institute for Risk Assessment (BfR), 2@bfr.bund.de, are potential partner organizations at national or EU level.
	Risk benefit assessment of food fortification and dietary supplement intake	Portugal	
6. Allergenicity/ food allergens in general (risk assessment and management)	Food allergenicity testing and risk management of food allergens: an urgent need for harmonization at European level	Belgium	
	Food allergy to insects: cross-reactivities to other allergens from a clinical and analytical point of view	Belgium	
	Allergenicity of processed and raw food allergens and related analytical detectability	Belgium	
	Identification of induced type of sensitization by application of pesticide active substances and co-formulants by a combination of in vitro pre-screening tests and (Q)SAR-models		Germany (BfR)
	Food allergens	Cyprus	
	Quality of edible insects produced under European rearing conditions	Czech Republic	
	Localisation of allergenic proteins in food	Czech Republic	
	Food Allergy Community Program	Portugal	
7. Aggregated exposure (via cocktail effects, but	EuroMix follow-up	Netherlands	Finland

including environmental/ food exposure)	Cumulative exposure assessment (European Test and Risk Assessment Strategies for Mixtures – EuroMix) (Horizon 2020 project)	Greece	EuroMix participants include 22 beneficiaries from 16 countries linked to international organisations including WHO, FAO and EFSA. RIVM (NL, coordinator), DLO (NL), ICL (UK), ANSES (FR), INRA (FR), INERIS (FR), UGENT (BE), FE (BE), BfR (DE), KI (SE), MATIS (IS), SGL (CY), NIJZ (SI), CZU (CZ), NIPH (NO), URV (ES), BPI (GR), UMIL (IT), DTU (DK), HSE (UK), ETHZ (CH), FERA (UK) (https://www.euromixproject.eu/partners/).
	Inter-species and strain differences of probiotic bifidobacteria depending on the host environment	Czech Republic	
	Population-based patterns of food acquisition, packaging, preparation and consumption in pregnant women and in 3 months to 6 years-old children	Portugal	
	Collaborated membership of Baltic state countries on the method development and application for chemical analysis and risk assessment of emerging mycotoxins: studies of public health and economic benefits of national agricultural products and market demanded foodstuff.	Latvia (Lithuania, Estonia)	

Chemical priorities

A) Member State priorities identified in Delphi Study	B) Catalogue of EU RAA Project Ideas	C) MS proposing (lead)	D) MS interested (involved)
8. Harmonisation of methods for risk assessment of chemical contaminants	NextGen Food Safety Knowledge Integration Framework	Germany	Sweden, Denmark, Hungary, Norway, Spain, Greece, France, UK
	Improvement of risk assessment for residents and bystanders	Germany	
	Process factors in risk assessment		Germany (BfR)
	The fate of cholesterol in thermally processed meat food and monitoring of oxysterols	Czech Republic	

	formation		
	FTRACE – Tracing food additives through a smartphone	Portugal	
	Dietary exposure assessment of chemical contaminants	Portugal	
	Development of a control system of PAHs and other food processing contaminants resulting from traditional culinary methods	Portugal	Finland
	Integrating social, food and health data to deliver knowledge for the identification of emerging risks along the food chain	Portugal	
	Collaborated membership of Baltic state countries on the method development and application for chemical analysis and risk assessment of emerging mycotoxins: studies of public health and economic benefits of national agricultural products and market demanded foodstuff.	Latvia (Lithuania, Estonia)	
9. Cumulative exposure assessment (e.g. for pesticide residues/ PAHs)	Cumulative exposure assessment	Germany (As leading party: RIVM (NL))	BfR and many other European institutes as ANSES (FR), ICL (UK), MATIS (IS), NIPH-NO (NO), SGL (CY) (s. https://www.euromixproject.eu/partners/)
	Comparative Cytotoxicity of Plant Protection Products and their Active Ingredients	Germany	
	EuroMix follow-up	Netherlands	
	Collection of processing techniques and processing factors for the estimation of magnitude of pesticide residues in processed commodities.	Greece	Benaki Phytopathological Institute (Greece), Federal Institute for Risk Assessment (Germany), National Institute for Public Health and the Environment (Netherlands), Poland (PIWet)

	Risk assessment of chemical food contaminants and its mixtures in infant and baby food and its impact on children´s health	Portugal	The Netherlands (RIVM) France (INRA)
	Development of a control system of PAHs and other food processing contaminants resulting from traditional culinary methods	Portugal	Poland (NIZP-PZH)
	Collaborated membership of Baltic state countries on the method development and application for chemical analysis and risk assessment of emerging mycotoxins: studies of public health and economic benefits of national agricultural products and market demanded foodstuff.	Latvia (Lithuania, Estonia)	
10. Infant and baby food	Risk assessment of chemical food contaminants and its mixtures in infant and baby food and its impact on children´s health	Portugal	The Netherlands (RIVM) France (INRA)
	Population-based patterns of food acquisition, packaging, preparation and consumption in pregnant women and in 3 months to 6 years-old children	Portugal	
	Prenatal and postnatal exposure to food-associated risks: a longitudinal study along infancy and childhood	Portugal	
	Risk assessment of exposure to multiple mycotoxins (mixture of aflatoxins and ochratoxin A and mixture of deoxynivalenol and zearalenone) in children and young people	Portugal	Finland
	Collaborated membership of Baltic state countries on the method development and application for chemical analysis and risk assessment of emerging mycotoxins: studies of public health	Latvia (Lithuania, Estonia)	

	and economic benefits of national agricultural products and market demanded foodstuff.		
11. Emerging contaminants	Evaluation of effects of emerging marine biotoxins and their monitoring to provide safer seafood to the consumer.	Belgium	**Belgium:** Centre d'Economie Rurale (CER Groupe), **Spain:** University of Santiago of Compostela, **United Kingdom:** The Queen's University of Belfast, **Spain:** Spanish National Research Council (CSIC), Poland (NIZP-PZH)
	Alternaria toxins – analytical challenges and impact of processing		**Germany** (BfR) **Belgium** (Ghent University), EURL Mycotoxins
	Emerging Contaminants		**Germany** (BfR) **France** (ANSES, IFREMER), **Netherlands** (RIKILT)
	International Conference: The burden of mycotoxins on animal and human health	Italy	
	Occurrence of the microplastics in marine environment and impact on the food safety and animal health and welfare	Norway	
	Occurrence of the microplastics in marine and inland surface waters and impact on the food safety and animal health and welfare	Slovenia	
	Assessing an emerging risk for human health: the spread of the toxic silver-cheeked toadfish Lagocephalus sceleratus across European seas.	Italy	
	Detection and identification of emerging contaminants using activity-based strategies	Netherlands	
	Emerging Contaminants in the Adriatic Sea	Slovenia	
	Determination and exposure assessment of bisphenols and related compounds in foods and beverages migrated from contact packaging materials.	Slovenia	
	The safety of hemp in food and food supplements	Sllovenia	

	"Novel" and "emerging" brominated flame retardants (NBFRs and EBFRs): occurrence in the environment of the Baltic region and possible impacts on the food safety	Latvia	
	Collaborated membership of Baltic state countries on the method development and application for chemical analysis and risk assessment of emerging mycotoxins: studies of public health and economic benefits of national agricultural products and market demanded foodstuff.	Latvia (Lithuania, Estonia)	
	Evaluation of effects of emerging marine biotoxins and their monitoring to provide safer seafood to the consumer.	Poland	

Microbiological priorities

A) Member State priorities identified in Delphi Study	B) Catalogue of EU RAA Project Ideas	C) MS proposing (lead)	D) MS interested (involved)
12. Systems for monitoring and characterising microbes isolated from food, environment and human illness cases	Transmission properties of CWD in Norway/Europe	Norway	
	Inter-species and strain differences of probiotic bifidobacteria depending on the host environment	Czech Republic	
	Development of a foodborne outbreak monitoring system and data transmission	Portugal	
	Characteristics of the HAV virus strains found in Poland	Poland	
13. Improve the use of genetic data (e.g. from whole genome sequencing) for risk assessment of	CampyLobactEr VirulomE and Resistome in a farm to fork approach - CLEVER	Austria	**Germany** (BfR), **Italy** (IZS), **Slovenia** (University of Ljubliana), Poland (PiWert, Puławy)

microbiological contaminants	Capacity building of microbial Next Generation Sequencing in Europe		Germany (BfR) Finland
	Transmission properties of CWD in Norway/Europe	Norway	
14. Antimicrobial/ antibiotic resistance	CampyLobactEr VirulomE and Resistome in a farm to fork approach - CLEVER	Austria	Germany (BfR), Italy (IZS), Slovenia (University of Ljubliana), Poland (PiWert, Puławy)
	One-Health approach for the assessment of antimicrobial resistance dynamics across compartments through phenotypic, genetic and metagenomic methods.	Italy	Poland (PIWet)
	Strategies to combat antimicrobial resistance in food, food processing facilities and agriculture	Czech Republic	Finland
	Impact of food intake patterns on antibiotic resistance profile in human microbiome, its antibiotic resistance profile and human vulnerability for infections	Portugal	
15. Microbial food pathogens (in general)	Identification of emerging food-borne pathogens		Germany (BfR), Poland (PilWet, Puławy) Finland
	NextGen Food Safety Knowledge Integration Framework	Germany	Sweden, Denmark, Hungary, Norway, Spain, Greece, France, UK, Poland (PilWet, Puławy), Finland
	Harmonization of the integrative molecular surveillance of foodborne pathogens of priority in the light of the technological shift towards Next Generation Sequencing (NGS).	Italy	Finland, Poland
	Evaluation of listeriosis risk due to the presence of L. monocytogenes in non-prepackaged cooked ready-to-eat meat products	Greece	
	Development of a database tool for assessing the risk of common food pathogens in foodstuffs	Greece	

	Strategies to combat antimicrobial resistance in food, food processing facilities and agriculture	Czech Republic	
	Quality of edible insects produced under European rearing conditions	Czech Republic	Finland
	Development of a foodborne outbreak monitoring system and data transmission	Portugal	
	Estimating the burden of foodborne diseases in Portugal	Portugal	
	Population-based patterns of food acquisition, packaging, preparation and consumption in pregnant women and in 3 months to 6 years-old children	Portugal	
16. Food-borne viruses (in general, e.g. Hepatitis A and Norovirus in fruit and vegetables)	Hepatitis E virus in pork and pork products		Germany (BfR), Finland
	Monitoring and risk assessment viruses in food		Italy, Poland (NIZP-PZH), Finland
17. Campylobacter (e.g. in poultry and ready-to-eat foods)	CampyLobactEr VirulomE and Resistome in a farm to fork approach - CLEVER	Austria	Germany (BfR), Italy (IZS), Slovenia (University of Ljubliana)
18. Zoonoses (in general, including bio-hazards, MRSA etc.)	Harmonization of the integrative molecular surveillance of foodborne pathogens of priority in the light of the technological shift towards Next Generation Sequencing (NGS).	Italy	Poland (PIWet, Puławy)
	Transmission properties of CWD in Norway/Europe	Norway	
	VTEC		Italy
	Accompanying risk communication activities for the topics of the EU risk assessment agenda and risk perception research		Germany (BfR)
	Wildlife disease surveillance	France	

	Strategies to combat antimicrobial resistance in food, food processing facilities and agriculture	Czech Republic	
	Development of a foodborne outbreak monitoring system and data transmission	Portugal	
	Estimating the burden of foodborne diseases in Portugal	Portugal	

Environmental priorities

A) Member State priorities identified in Delphi Study	B) Catalogue of EU RAA Project Ideas	C) MS proposing (lead)	D) MS interested (involved)
19. Improving information on the occurrence and spread of harmful organisms	Impact of global food and feed supply chains on the spread of harmful organisms		Germany (BfR) Sweden (SVA), Denmark (Uco), Ireland (TEAGASC)
	The spread of harmful organisms in terms of human and animal health	Slovakia	Poland (NIZP-PZH)
	Occurrence of the microplastics in marine environment and impact on the food safety and animal health and welfare	Norway	
	Occurrence of the microplastics in marine and inland surface waters and impact on the food safety and animal health and welfare	Slovenia	
	Study of the wild/weed plants as reservoir of phytoplasmas infecting fruit-trees.	Greece	
	Xylella Fastidiosa Active Containment Through a multidisciplinary-Oriented Research Strategy (XF-ACTORS)	Greece	13 countries involved
	Assessment of the risk posed by emerging non-European Citrus tristeza virus (CTV) isolates to the Greek and European citriculture	Greece	
	The application of Next-Generation Sequencing technology for the detection and diagnosis of non-culturable organisms: viruses and viroids (NGS-DETECT).	Greece	15 organisations involved

	Development and implementation of early detection tools and effective management strategies for invasive non-European and other selected fruit fly species of economic importance (FLY DETECT)	Greece	Benaki Phytopathological Institute, Greece (Coordinator), Österreichische Agentur für Gesundheit und Ernährungssicherheit, Austria, B'lgarska Agentsja po bezopasnost na khranite, Bulgaria, Department of Agriculture Food and the Marine, Ireland, Institute of Soil Science, Agrotechnology and Plant Protection, Bulgaria
	Consensus detection and identification protocol for Acidovorax citrulli on cucurbit seeds	Greece	Università di Modena e Reggio Emilia, Italy (Coordinator), ANSES, France, National Food Chain Safety Office Directorate of Plant Protection, Hungary, Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria, Italy, Nederlandse Voedsel-en Warenautoriteit, The Netherlands, All-Russian Plant Quarantine Centre, Russia, Benaki Phyotpathological Institute, Greece, • Plant Protection Central Research Institute, Turkey
	Assessment of a generic method for the detection of Begomoviruses	Greece	ANSES, France (Coordinator), AGES, Austria, Benaki Phytopathological Institute, Greece, National Institute of Biology, Slovenia, SASA, UK, Consiglio per la Ricerca in Agricoltura e l'Analisi dell' Economia Agraria, Italy, INIAV, Portugal, International Potato Center, Peru
	Test performance studies of detection tests of Pospiviroides on Solanaceae	Greece	Julius Kühn-Institut, Germany (Coordinator), ANSES, France, ILVO, Belgium, National Institute of Biology (NIB), Slovenia, Benaki Phytopathological Institute, Greece, Canadian Food Inspection Agency-Plant Research & Strategies, Canada, SASA, UK, INIAV, Portugal, APHIS-USDA, USA, International Potato Center
	Identification of potato cultivars resistant to pathotype 18(T1) of the quarantine fungus Synchytrium endobioticum	Greece	Benaki Phytopathological Institute, Greece, Directorate of Agricultural Economy and Veterinary of the Regional Unit of Drama, Greece
	Development of molecular methods for the identification of Synchytrium endobioticum pathotypes	Greece	
	Wildlife disease surveillance	France	As interested parties: ANSES (Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail) / ONCFS (Office National de la Chasse et de la Faune Sauvage)
	Citizen-based monitoring for early detection of alien plant pest introductions	Slovenia	

	Increasing honey bee health and quality of bee products in the era of Aethina tumida	Slovenia	
	Integrating social, food and health data to deliver knowledge for the identification of emerging risks along the food chain	Portugal	
	Collaborated membership of Baltic state countries on the method development and application for chemical analysis and risk assessment of emerging mycotoxins: studies of public health and economic benefits of national agricultural products and market demanded foodstuff.	Latvia (Lithuania, Estonia)	
20. Ribonucleic acid interference (RNAi) applied to food producing organisms as pesticide, veterinary medicine or newly expressed trait in genetically modified crops			
21. Better understand biological organisms and plant substances used in crop protection (reducing the need for chemicals, e.g. pesticides)			Norway
	Potential of natural compounds and microbial biocontrol agents to substitute pesticides for safer food production	Greece	Benaki Phytopathological Institute (BPI). Laboratories of Mycology, Biological Control, Toxicological Control and Chemical control of Pesticides. Other EU Institutes involved: Julius Kühn-Institut (JKI), Bundesforschungsinstitut für Kulturpflanzen, Germany, Forschungsinstitut für Biologischen Landbau Stiftung (FiBL), Switzerland, Fondazione Edmund Mach (FEM), Italy
	Plant substances with potential use in crop production and their fate in environment	Czech Republic	
22. The impact of chemicals on the ecosystem (release of chemicals into the	Fate and behaviour of pesticides in the environment in the northern zone	Norway	

environment)	Screening of available evidence on chemical substances for the identification of endocrine disruptors according to different options in the context of an Impact Assessment. Specific Contract SANTE/2015/E3/SI2.706218.	Greece	IBF International Consulting (Brussels, Belgium) (Coordinator), Benaki Phytopathological Institute (BPI) (Greece), Joint Research Center (JRC) (Italy), DG-SANTE, EC.
	Monitoring of pesticides, metabolites and other contaminants residues in bees and related apiculture matrices. Risk assessment for pollinators.	Greece	
	Environmental risks to groundwater ecosystems related to use of feed additives	Slovenia	
	Exposure of bumblebees and other wild pollinators to pesticides in spraying in the early morning and evening	Slovenia	
23. Presence/detection of environmental contaminants in food (e.g. from agricultural, industrial or household sources)	Determination of contaminants PAHs of exogenous and endogenous sources in edible oils with the connection to their geographical and botanical authenticity	Slovenia	
	Risk assessment of bacterial adhesion on food contact surfaces	Slovenia	
	Quality and safety of urban honey bee products in post-industrial era	Slovenia	
24. Cocktail effects (health risk assessment of chemical mixtures, e.g. food additives)	Cumulative exposure assessment	Germany (As leading party: RIVM (NL))	BfR and many other European institutes as ANSES (FR), ICL (UK), MATIS (IS), NIPH-NO (NO), SGL (CY) (s. https://www.euromixproject.eu/partners/), Poland (NIZP-PZH)
	Comparative Cytotoxicity of Plant Protection Products and their Active Ingredients	Germany	
	EuroMix follow-up	Netherlands	
	FTRACE – Tracing food additives through a smartphone	Portugal	
	Risk assessment of chemical food contaminants and its mixtures in infant and baby food and its impact on children´s health	Portugal	The Netherlands (RIVM) France (INRA)

Nutrition priorities			
A) Member State priorities identified in Delphi Study	**B) Catalogue of EU RAA Project Ideas**	**C) MS proposing (lead)**	**D) MS interested (involved)**
25. Indirect effects on human health due to modified agricultural practices (e.g. via reduction of pesticide use, changed content of mycotoxins)	Impact of food intake patterns on antibiotic resistance profile in human microbiome, its antibiotic resistance profile and human vulnerability for infections	Portugal	
26. Developing standard biomarkers of intake of and/or exposure to contaminants	Development standard biomarker	Germany	France (ANSES) and more
	Urinary metabolomic profile – a path to discover novel biomarkers of dietary exposure	Portugal	
27. Food supplements risk/benefits (in general)	Food supplement risk/benefits	Germany	Denmark (DTU Food), France (ANSES) and more
	Accompanying risk communication activities for the topics of the EU risk assessment agenda and risk perception research		Germany (BfR)
	Screening of animal origin food supplements to anabolic and stimulant contaminants	Slovenia	
	Quality of edible insects produced under European rearing conditions	Czech Republic	
	Risk evaluation of herbal food supplements - drug interactions	Portugal	
	Improving targeted risk communication activities and risk perception research for the topics of the EU risk assessment agenda	Portugal	Norway, France and Switzerland as well as The Federal Institute for Risk Assessment (BfR), 2@bfr.bund.de, are potential partner organizations at national or EU level.
	Risk benefit assessment of food fortification and dietary supplement intake	Portugal	
	Collaborated membership of Baltic state countries on the method development and application for chemical analysis and risk assessment of emerging mycotoxins: studies of public health and economic benefits of national	Latvia (Lithuania, Estonia)	

	agricultural products and market demanded foodstuff.		
28. Determination of allergen thresholds (clinical studies), in conjunction with immune-chemical measurements of allergens in foods	Allergenicity of processed and raw food allergens and related analytical detectability	Belgium	
	Determinations of allergen thresholds, measurements of allergens in food		Germany (BfR)

Additional projects

Stated under general Delphi priorities (Topic 1-7 (Generic) and Topic 8-11 (Chemical risk assessment))	Computational toxicology		Germany (BfR) Norway and Denmark
	Non-plastics in Food Contact Materials (FCM) - 1) Identification and assessment of substances migrating from rubber materials into food. 2) Assessment of substances transferring from printed food contact materials into food with the aim of deriving health based limit values.		Germany (BfR) Netharlends (RIVM, for the first project) and Czech Republic (BLV, for the second project)
	Endocrine disruptors		Germany (BfR) Denmark (DTU) and Netherlands (RIVM)
	Detection of multiple chemical contaminants in the same assay		Germany (BfR) Japan and Denmark
	Nanomaterials / nanotechnology		Germany (BfR) Denmark (DTU), Netherlands (RIKILT) and Italy (JRC)
	Microplastics in the food chain		Germany (BfR)
	Cocktail effect		Germany (BfR) Denmark and Norway
	Screening for the detection of hormone-like substances in food packaging		Germany (BfR) Denmark and Netherlands
	2017 Workshop on Plant Health Crisis preparedness	Portugal	
No specific Delphi priority	Plant pests ranking process for prioritization of risk management actions in the EU	France	Finland

Country Project Ideas

Template for first joint projects ideas under the

EU RAA

1. Country:

Austria

2. Project title:

CampyLobactEr VirulomE and Resistome in a farm to fork approach - CLEVER

Comparative analysis of *Campylobacter* strains will give a new insight into their importance among foodborne pathogens - it will highlight its virulence potential, antimicrobial resistance in the food chain, compromising the effectiveness of its control “from farm to fork”. Additionally, the role of *Campylobacter* stress response and adaptation with the impact on survival in the environment and pathogenicity will be evaluated in *Campylobacter* persistence, resistance and pathogenicity modulation.

3. Project link to the Delphi priorities / EFSA Strategy topics

17. Campylobacter (e.g. in poultry and ready-to-eat foods) / address complex questions and reduce uncertainty. These areas include: Biological risk assessment (across food safety, animal health and welfare and plant health): food-borne viruses, Campylobacter from farm to fork, predictive modeling for biological risks, microorganisms as plant protection products, microbiological criteria, whole genome sequencing, animal-based indicators for animal welfare risk assessment

Further overlapping Delphi priorities

13. Improve the use of genetic data (e.g. from whole genome sequencing) for risk assessment of microbiological contaminants
14. Antimicrobial/ antibiotic resistance

4. Project description:

Due to sampling according to directive 2003/99/EC and national/international projects (e.g. CamChain, CamCon, others) numerous strains and phenotypic data on antimicrobial resistance by microdilution exist [1,2,3,4]. Further, the method of whole genome sequencing (WGS) has been implemented at the laboratories of the project partners and mainly used for the analysis of “classical” food-borne pathogens, such as *Salmonella*, *Listeria monocytogenes* and VTEC. For *Campylobacter*, low amount of data is available for the complex analysis of genome adaptation, such as antibiotic resistance and putative virulence factors and reasoning about the enormous adaptive capability of *Campylobacter* strains.

Recent studies indicated genetic similarity and persistence at different levels in the farm to fork continuum in central Europe[5,6]. Further, correlation between antimicrobial resistance phenotypes and genotypes[7] and spread of quinolone resistance has been revealed. However, to supplement existing data gaps[8] and to predict the level of resistance and virulence factors, research must determine the underlying responsible mechanisms [9,10,11] and virulence factors linked to phenotypic traits.

The consortium aims at bringing together *Campylobacter* experts from different countries for a synergistical analysis of complementary *Campylobacter* datasets and to enlarge knowledge about virluence factors and adaption mechanisms of this important food-borne pathogen.

Main objectives:

1. Joint analysis of *Campylobacter* population structure (exisiting data; complementary, new data):
- Sampling to complete datasets with geographical, clinical and epidemiological data;
- Status quo analysis and comparison with "ancient" strains from existing collections (at least 20 years old strains);

2. Characterization of antimicrobial resistance mechanisms: adaptation, survival/fitness and contribution of efflux pumps in *Campylobacter* strains
3. Analysis of *Campylobacter* pathogenicity and time-dependent adaptation: WGS, functional genomics, induced stress response, virulence properties (e.g. mobility, adhesion, aggregation), genetic evolution due to different stress exposures, horizontal gene transfer.

Nature of activities:
- Create a comparative dataset (including sampling, phenotypic analysis and WGS)
- Comparable and comparative analysis of WGS dataset using different tools
- Genome wide association study for phenotypic traits, including adaption
- Microbial risk assessment using WGS across subpopulations

5. MS organisation(s) involved:

- Germany: Bundesinstitut fur Risikobewertung (BfR); NRL for Campylobacter, Kerstin Stingl, Kerstin.Stingl@bfr.bund.de
- Italy: Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise (IZS), NRL for Campylobacter, Giuliano Garofolo, g.garofolo@izs.it, and Elisabetta Di Giannatale, e.digiannatale@izs.it
- Slovenia: University of Ljubliana, Sonja Smole Možina, Sonja.Smole@bf.uni-lj.si

6. Project planning timeline:

April 2017-

7. Link to related documents (if any):

1. Di Giannatale, E. *et al.* Characterization of antimicrobial resistance patterns and detection of virulence genes in Campylobacter isolates in Italy. *Sensors (Basel)* **14,** 3308–3322 (2014).

2. Mavri, A., Kurinčič, M. & Smole-Možina, S. The prevalence of antibiotic and biocide resistance among Campylobacter coli and Campylobacter jejuni from different sources. *Food technology and biotechnology* **50,** 371–376 (2012).

3. Stingl, K. *et al.* Quo vadis? — Monitoring *Campylobacter* in Germany. *European Journal of Microbiology and Immunology* **2,** 88–96 (2012).

4. Vogt, P. *et al.* Resistance situation of Campylobacter spp. in the food chain. *[Resistenzsituation von Campylobacter spp. in der Lebensmittelkette, in German] GERMAP, Bundesamt für Verbraucherschutz und Lebensmittelsicherheit (BVL), Berlin.* (in press).

5. Kovač, J. *et al.* The evidence for clonal spreading of quinolone resistance with a particular clonal complex of Campylobacter jejuni. *Epidemiology and Infection* **142,** 2595–2603 (2014).

6. Kovač, J. *et al.* High genetic similarity of ciprofloxacin-resistant Campylobacter jejuni in central Europe. *Frontiers in Microbiology* **6,** (2015).

7. Zhao, S. *et al.* Whole-Genome Sequencing Analysis Accurately Predicts Antimicrobial Resistance Phenotypes in Campylobacter spp. *Appl. Environ. Microbiol.* **82,** 459–466 (2016).

8. Juntunen, P., Heiska, H. & Hanninen, M.-L. Campylobacter coli isolates from Finnish farrowing farms using aminopenicillins: high prevalence of bla(OXA-61) and β-lactamase production, but low MIC values. *Foodborne Pathog. Dis.* **9,** 902–906 (2012).

9. Klančnik, A., Vučković, D., Plankl, M., Abram, M. & Smole Možina, S. *In Vivo* Modulation of *Campylobacter jejuni* Virulence in Response to Environmental Stress. *Foodborne Pathogens and Disease* **10,** 566–572 (2013).

10. Klančnik, A., Vučković, D., Jamnik, P., Abram, M. & Možina, S. S. Stress Response and Virulence of Heat-Stressed Campylobacter jejuni. *Microbes and Environments* **29,** 338–345 (2014).

11. Klančnik, A. *et al.* Virulence genes and cytokine profile in systemic murine *Campylobacter coli* infection. *Virulence* **6,** 581–590 (2015)

EU RAA Catalogue of Project Ideas

Template for first joint projects ideas under the EU RAA

1. **Country:**

Belgium

2. **Project title:**

Allergenicity of processed and raw food allergens and related analytical detectability

3. **Project link to the Delphi priorities / EFSA Strategy topics**

28: Determination of allergen thresholds (clinical studies), in conjunction with immune-chemical measurements of allergens in food

6 : Allergenicity/food allergens in general (risk assessment and management)

4. **Project description:**

Food allergy is a global health problem affecting 2-3% of adults and 8% of children. During food production, cross contaminations with allergens or misslabelling can occur and endanger food allergic customers.

To protect allergic consumers and give more confidence in food composition/safety, food operators have to perform risk assessment and to plan food allergens testing of their products.
However, food industries, together with food safety authorities, have to face challenges.
First, there are no regulatory threshold for food allergens; even if some clinical data are available, they have never been translated in European action levels. This is true for raw allergens and more for processed food.
Secondly, testing of food allergens should produce trustable quantitative results. If this analytical step could appear as simple, food complexity and food process can lead to modifications of allergenic ingredients and to difficulties for the detection and the quantification of allergens. Underestimation of allergens content could by example results from thermal process or presence of interferences in food samples (tannins, fat,…).

This 48 month project will be a collaboration between clinicians and food testing analysts for a better comprehension of food allergens and allergies.

A
literature review will first be performed to list available clinical data and to identify gaps that needs to be addressed.
Based on this review, different processed food materials containing known amount of allergenic ingredients will be produced. These reference materials will be first analytically characterized (ELISA, PCR and/or MS-based methods) and the impact of the process on the quantitative result of analysis will be estimated.
The same reference materials will afterward be used for clinical studies. Prick tests will be realized with raw and processed reference materials; by this way, the influence of food process on food allergies will be evaluated. This study will therefore produce clinical data useful for threshold setting.

Beside the principal objective of clinical data collection, a complementary task will be to study the link between allergenicity and analytical detectability.

5. MS organisation(s) involved:

Member State : Belgium
Competent organization : Centre d'Economie Rurale (CER Groupe)
Contact person : Nathalie Gillard
Email: n.gillard@cergroupe.be

Member State : Belgium
Competent organization : Own Capital of the Institute for Agricultural and Fisheries Research
Contact person : Marc De Loose
Email: marc.deloose@ilvo.vlaanderen.be

Member State : Belgium
Competent organization : University of Liege (Université de Liège)
Contact person : Romy Gadisseur
Email: romy.gadisseur@chu.ulg.ac.be

Member State : Belgium
Competent organization : Ghent University
Contact person : Philippe Gevaert / Myriam Van Winckel
Email: philippe.gevaert@ugent.be / Myriam.VanWinckel@uzgent.be

6. Project planning timeline:

Start: 1th January 2018
Duration: 48 months

7. Link to related documents (if any):

EU RAA Catalogue of Project Ideas

Template for first joint projects ideas under the EU RAA

1. **Country:**

   Belgium

2. **Project title:**

Evaluation of effects of emerging marine biotoxins and their monitoring to provide safer seafood to the consumer.

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Reference N°11 corresponding to “Emerging contaminants”.

4. **Project description:**

The anthropogenic effects linked to climate change have not only led to adverse consequences for ecological environments but also for human health most notably with the risk posed by emerging marine biotoxins. The recent discovery of toxin producing algae and the revealed incidences of harmful algal bloom distribution suggest that some toxins could also emerge in temperate zones within Europe. For emerging marine biotoxins, produced by algae or bacteria, there is a lack of information and whereby further research studies are required to cover the gaps in knowledge relating to their prevalence and detection in shellfish / fish and to their toxicity level such as for brevetoxins, tetrodotoxins, cyclic imines,...

The first part of the project concerns the determination of toxicological properties using the mouse bioassay (MBA), cytotoxicity assay and histology. The additional toxicological information will be valuable to the establishment of the acute reference dosage and will be useful to determine major modes of action and provide sufficient data to perform risk assessments. The challenge is to generate suitable toxicity data especially for unregulated emerging marine toxins.

The second part of the project will focus on the development of MBA-replacement methods such as immunological diagnostics for a rapid determination of targeted emerging marine toxins and LC-MS

methods to identify their main metabolites or analogues and for the confirmation of positive samples. Due to the diverse origins in vector reported for emerging marine toxins, the monitoring for these toxins will not be exclusively performed in bivalve molluscs in order to avoid an underestimation of the risk to public health. The challenge is to generate reliable knowledge and solutions to determine toxicity data for unregulated emerging marine toxins.

The third part of the project will be dedicated to a survey: the developed detection methods will be applied to a range of seafood samples collected from different regions in Europe to determine the occurrence of these toxins and the extend of the problem.

5. MS organisation(s) involved:

- Member State : Belgium
- Competent organization : Centre d'Economie Rurale (CER Groupe)
- Contact person : Nathalie Gillard
- Email: n.gillard@cergroupe.be
- responsible national body : Benoit Horion (benoit.horion@sante.belgique.be)

- Member State : Spain
- Competent organization : University of Santiago of Compostela
- Contact person : Luis Botana
- Email: luis.botana@usc.es

- Member State : United Kingdom.
- Competent organization : The Queen's University of Belfast
- Contact person : Katrina Campbell
- Email: katrina.campbell@qub.ac.uk

- Member State : Spain
- Competent organization : Spanish National Research Council (Agencia Estatal Consejo Superior de Investigaciones Científicas, CSIC)
- Contact person : Pilar Marco
- Email: pilar.marco@cid.csic.es

6. Project planning timeline:

January 2018 – duration 3 years

7. Link to related documents (if any):

EU RAA Catalogue of Project Ideas

Template for first joint projects ideas under the EU RAA

1. **Country:**

   Belgium

2. **Project title:**

   Food allergy to insects: cross-reactivities to other allergens from a clinical and analytical point of view

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Reference N°6 corresponding to "Allergenicity/food allergens in general (risk assessment and management)".

4. **Project description:**

   The insects are considered as a good alternative for potential food sources due to their high content of proteins; however their consumption can induce food allergic reactions in humans. Food allergens may be associated to the cross-reactivities, they occur when IgE antibodies are able to recognize allergens from different origins that share the same epitopes. It is the case for people who are allergic to shellfish and molluscs (and/or to acarids); they can present an allergic reaction to the consumption of insects. Cross-reactivity can also occur between two species of insects, the antibodies for a specific allergen in one insect species is capable of identifying allergens in another and may thus induce an allergic reaction to that insect as well. These risks are assumed to be the same as for other more common food but their concrete effects on human and their scope are not yet known.

   The project will lead complementary researches, by targeting the insects which could be concerned by large-scale breedings.

The first part of the project will be a clinical part: different extracts from insects and from other foods will be tested by ELISA using IgE antibodies from patients clinically allergic to insects, available from a bank of sera. The western blot 2D will help us in this task aiming to do a link between the profile of western blot and clinical scheme of patients sensitive to insects. Then, we will identify proteins of insects playing a role in cross-reactivity between insects and other allergens.

The second part of the project will consist to develop rapid analytical methods for detecting proteins of insects in food. We will also assess if various types of preparations of insects (freeze-dried powdered, whole insect, heat processing,…) have an influence on the reliability of test.

5. MS organisation(s) involved:

- Member State : Belgium
- Competent organization : Centre d'Economie Rurale (CER Groupe)
- Contact person : Nathalie Gillard
- Email: n.gillard@cergroupe.be
- responsible national body : Benoit Horion (benoit.horion@sante.belgique.be)

- Member State : Belgium
- Competent organization : University of Liège (Université de Liège)
- Contact person : Romy Gadisseur
- Email: romy.gadisseur@chu.ulg.ac.be

6. Project planning timeline:

January 2018 – duration 3 years

7. Link to related documents (if any):

EU RAA Catalogue of Project Ideas

Template for first joint projects ideas under the EU RAA

1. **Country:**

   Belgium

2. **Project title:**

Food allergenicity testing and risk management of food allergens: an urgent need for harmonization at European level

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Add reference to the Delphi priority topic listed in the Annex B of the EU RAA paper and/or EFSA Strategy topics (particularly the objective under the heading 'Prepare for future risk assessment challenges').
   The EU RAA paper is accessible on the DMS here:
   https://dms.efsa.europa.eu/otcs/cs.exe?func=ll&objaction=overview&objid=15782409
   and the EFSA Strategy can be found on the EFSA Web site here :
   http://www.efsa.europa.eu/sites/default/files/corporate_publications/files/strategy2020.pdf

   Risk management of food allergens is listed as general priority 6 in the Delphi priority topic list. Furthermore in the « EFSA Strategy 2020 » document the development and implementation of harmonised methodologies and guidance documents for risk assessment across the EU and internationally is listed as an operational objective in order to prepare for future risk assessment challenges.

4. **Project description:**

   Brief description of the project, its main objectives and nature of activities (max 2000 characters)

   It is estimated that 1 to 3% of the population suffers from primary food allergy. In some cases this leads to anaphylactic shock. 7 to 10% of the population is faced with a lighter form of food allergy. The only remedy is avoiding food which is known that will cause reaction. For patients correct information through labelling is vital.
   EU regulation 1169/2011 aims to inform consumers on ingredients used. However, the EU legislation does not regulate the voluntary precautionary allergen labelling (PAL). PAL is based on the principle to inform consumers on the possible presence of unavoidable carry-over or contamination of ingredients with allergens. It is often used without proper risk assessment and no threshold levels for PAL are agreed. In function of enforcement of EU 1169/2011 and PAL it is also not determined on how the analytical testing should be carried out. The unit for expressing the analytical output is not fixed. This makes it difficult

for the patient to interpret the labelling information in function of their own risk profile and also result in legal uncertainty for the food producers and retail.

On the basis of a literature study data will be collected on clinical thresholds for the different allergens. On this basis action limits for enforcement will be proposed. This is relevant to determine the appropriate analytical strategies (which ingredient specific elements to be determined in the analysis, LOD, LOQ, reference material, interpretation of analytical data, expression/conversion of measured quantities to one single unit in function of comparability …). This is of utmost importance for food industry to improve their risk management of allergens, for Food Safety authorities to harmonize enforcement over the MS and for testing laboratories to improve the quality of the reported output. The project aims to propose and communicate criteria for harmonisation of detection of food allergens and to identify, if appropriate, further needs for research.

5. **MS organisation(s) involved:**

Contact details (name and email) of the responsible national body(ies)

Member State : Belgium
Competent organization : Belgian Federal Agency for the Safety of the Food Chain (FASFC) and Scientific Committee of the Federal Agency for the Safety of the Food Chain (Sci Com-FASFC)
Contact person : Xavier Van Huffel
Email: xavier.vanhuffel@favv.be

Member State : Belgium
Competent organization : Own Capital of the Institute for Agricultural and Fisheries Research
Contact person : Marc De Loose, Christof Van Poucke
Email: marc.deloose@ilvo.vlaanderen.be, christof.vanpoucke@ilvo.vlaanderen.be

Member State : Belgium
Competent organization : Centre d'Economie Rurale (CER Groupe)
Contact person : Nathalie Gillard
Email: n.gillard@cergroupe.be

6. **Project planning timeline:**

Suggested start date and duration

Starting data: May 2017
Duration: 2 years

7. **Link to related documents (if any):**

http://onlinelibrary.wiley.com/doi/10.2903/j.efsa.2014.3894/full

EU RAA Catalogue of Project Ideas
Template for first joint projects ideas under the EU RAA

1. **Country:**

Bulgaria

2. **Project title:**

Biology and control of some exotic, emerging and transboundary vector-borne and zoonotic diseases in Bulgaria and Germany with emphasis of veterinary and public health importance

3. **Project link to the Delphi priorities / EFSA Strategy topics**

Delphi study priority 3: environmental issues impacting on human health through the food chain

4. **Project description:**

Objectives:

1. *To perform research on investigating the biological, ecological and epidemiological components of some vector-borne diseases (VBD), their spread, introduction, emergence, phenology of the competent vectors and significance for animal and human health (zoonoses)*
2. *To propose innovative tools for effective control and prevention, capacity building for effective and adequate reaction by using acquired knowledge of competent vectors, their biological, ecological and epidemiological influence on the diseases transmission and their emergence.*

Inputs:

1. *Selection of the main groups of arthropod vectors involved in the transmission of some vector-borne diseases in common interest: ticks, mosquitoes, sandflies, blood suckling flies (Horne fly, Stomoxis, Thabanidae) and biting midges (Culicoides).*
2. *Selection of the main actual diseases of common interest to veterinary and public health, both for their direct importance for livectock sector and for public health (for both countries – BG and DE).*
3. *Further justification of their role as vectors and hosts for many pathogens, focussing on vector-disease quantitative livecycle modelling.*
4. *The acquired predictive results and predictive models will be used to assess the climate or environmental change scenarios and risk of disease emergences, as well vectors or diseases control strategies. Human behavior, agricultural management and technologies are close related to risk assessment. Perception of risk level will be an important component of VBD and their introduction, emergence and modelling of spread.*

***Benefits**:*
The consequences, triggered by the proposed platform "Biology and control of some exotic, emerging and trans boundary vector-borne and zoonotic diseases in Bulgaria and Germany" for veterinary and public health in both countries directly will influence the veterinary and public health competent authorities for enhance and capacity building for effective control and reaction. The project also will focus to these aspects of disease control of veterinary and public health authorities. The couple of innovative research methods, tools and results (knowledge) obtained during the project will be a step forward to generate new approaches of VBD control in terms of disease monitoring and the early warning systems, and will reinforce the general framework of common diseases (zoonoses) management and control systems. For all these aspects, the both countries will benefit and amplify the scientific results, capacity building, and establishment of research networks by focusing on exotic, emerging, communicable and trans-boundary, vector-borne diseases in face of changing European environmental and climate conditions.

5. MS organisation(s) involved:

As interested party: Risk Assessment Center on Food Chain, Bulgaria in collaboration with High Veterinary School in Hannover, Germany, other potential partner organizations at national or EU level: TBD

6. Project planning timeline:

TBD

7. Link to related documents (if any):

Template for first joint projects ideas under the EU RAA

1. **Country:**

Cyprus

2. **Project title:**

Food allergens

3. **Project link to the Delphi priorities / EFSA Strategy topics**

Delphi priority number 6: Allergenicity/ food allergens in general (risk assessment and management)

4. **Project description:**

The number of people with food allergies is increasing year by year and despite the fact that exact prevalence is unknown, estimates are[(1)] adults ~2%, Children ~6%, summing up to 250 million people worldwide.
The introduction of the new Regulation[(2)] on labelling, has been a great improvement for the prevention of such food allergies, since the consumer is given warning that the food contains or may contain a food allergen. Cases of unsuspected consumers ended up in hospital in a serious condition. There is therefore a need for more stringent control on behalf of the Food Authorities and National Labs[(3)] that have sensitive and reliable methods but also the need to have a harmonized approach, since there is a free movement of food products among MS. This approach is also necessary for import control for products.
Focus on products, that could be fraudulently substituted with food allergens, for economic gain, and can go by undetected, is important where unsuspected consumers can find themselves in a life threatening situation[(4)].
Cyprus, was among the countries which gave in the recent past a number of RASFF Notifications, based on a zero tolerance for a food allergen. Later Cyprus decided to use the Risk Assessment tool "Vital" prior to Notifications but this seems not to be fully accepted by MS. In the RASFF system, countries report[(5)] allergens at 1.5ppb but others at higher levels.
Allergiologists in Cyprus placed themselves at zero tolerance for food allergens as the concentration of proteins that can bring allergic reactions to consumers varies from person to person and from protein to protein. There is consequently a need for further implementing a robust traceability system in place, strict implementation of the Regulation with food surveillance and control programmes, sensitive and reliable methods for the

determination of
allergens, studies for the threshold and a harmonized risk assessment of food allergens.

5. MS organisation(s) involved:

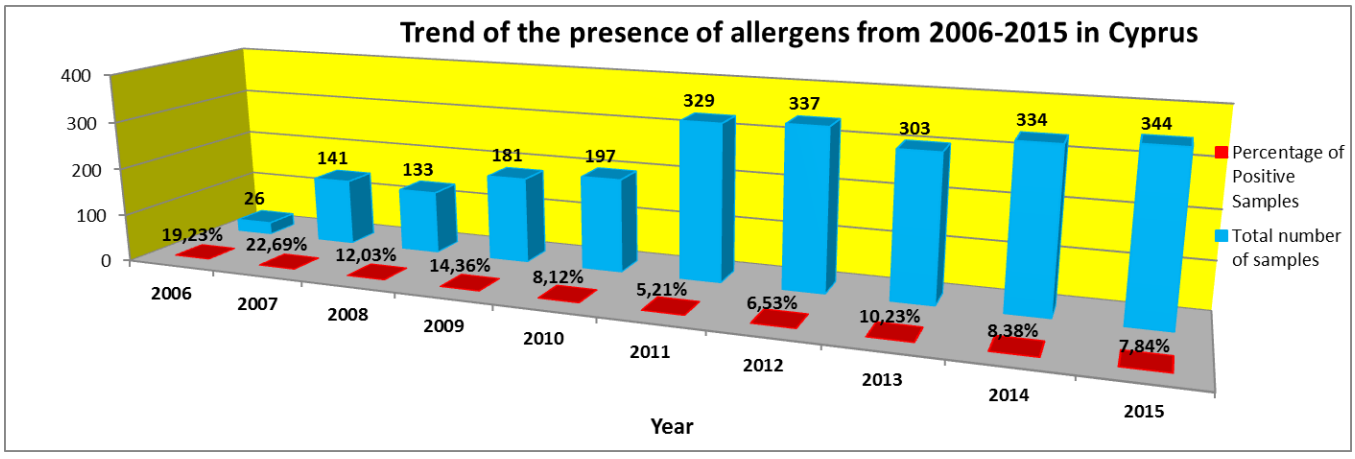
Dr. Popi Nicolaidou-Kanari, Director of State General Laboratory (SGL), Ministry of Health, email: pkanari@sgl.moh.gov.cy

6. Project planning timeline:

Suggested start date: January- February 2017, Duration: 2 years

7. Link to related documents (if any):

(1) World Allergy Organisation Report, "Food Allergy", June 2011.
(2) Reg. EC 1169/2011.
(3) Table: "Trend of the presence of allergens from 2006-2015 in Cyprus". (attached below)
(4) BBC News – Peanut curry dead – May 2016.
(5) RASFF notification no. 2016.0561, Subject: Traces of milk in acacia honey from China.



EU RAA

Project idea

1. **Country**

Czech Republic

2. **Project title:**

Strategies to combat antimicrobial resistance in food, food processing facilities and agriculture

3. **Project link to the Delphi priorities / EFSA Strategy topics**

Delphi study: Topic 14. Antimicrobial/ antibiotic resistance [M]
- Other related topics: 15. Microbial food pathogens (in general) [M]
18. Zoonoses (in general, including bio-hazards, MRSA etc.) [M]

EFSA Strategy topics: **Strategic Objective 3** - Build the EU's scientific assessment capacity and knowledge community
- **Operational objective 1:** Set up and implement a common risk assessment and research agenda with Member States and EU agencies, in collaboration with international partners
- *Operational objective 2*: Foster the growth of the EU and international risk assessment community

4. **Project description:**

The project focus is to create an international platform of experts in order to identify main weaknesses related to the occurrence and spread of antimicrobial-resistant microorganisms (ARM) in food and agricultural sector; and to propose main priorities, future directions, possibilities and new approaches to limit antimicrobial resistance, with special focus (but not limited) on the development of preparations and methods for active (direct) ARM eradication (new mode of action; activity enhancement; low cost; low toxicity; ecologically friendly etc.)

Objectives:
- To collect data on the occurrence of ARM in food and agricultural sector and evidence based documents on the infection outbreaks caused by ARM in order to identify the main weaknesses and threats related to ARM, antimicrobials, technics, sectors, facilities (e.g. determine the importance of particular ARM species; resistance towards particular antimicrobials with high incidence and spread across the facilities/ARM/ foods/animals; determine high risk environments/foods/animals in the sectors of interest as a potential reservoir of ARM; identify the less effective approaches etc.)
- To propose strategies, approaches, alternatives and research focuses that could lead to minimizing the risks related to ARM within the sector.
- To promote the research focused on the development of new antimicrobials as well as alternative approaches to combat antimicrobial resistance and to define main research directions in the field.

- To support the research projects focused on the development of new antimicrobials and alternative approaches to combat antimicrobial resistance in the sector (if applicable within the frame of the project)
- To organise initiatives and events to create/support networking between experts and relevant institutions in national as well as international level.
- To support training programs and knowledge exchange through workshops and mobility of post-docs and Ph.D. students and staff.

5. MS organisation(s) involved:

Czech University of Life Sciences Prague
contact: Pavel Novy (novy@af.czu.cz)

Potential partner organizations at national or EU level: TBD (in general, organizations and experts dealing with ARM, food-borne pathogens and diseases, antimicrobials, health and veterinary institutions and R&D organizations focused on the topic are welcome to participate)

6. Project planning timeline:

Planned start date: 2018
Planned duration: 3 years

7. Link to related documents (if any):

- Directive 2003/99/EC of the European Parliament and of the Council of 17 November 2003 on the monitoring of zoonoses and zoonotic agents, amending Council Decision 90/424/EEC and repealing Council Directive 92/117/EEC
- Decision 2013/652/EU of 12 November 2013 on the monitoring and reporting of antimicrobial resistance in zoonotic and commensal bacteria
- EFSA (European Food Safety Authority) and ECDC (European Centre for Disease Prevention and Control), 2016. The European Union summary report on antimicrobial resistance in zoonotic and indicator bacteria from humans, animals and food 2014. EFSA Journal 2016;14(2):4380, 207pp. doi:10.2903/j.efsa.2016.4380
- EU Action plan against the rising threats from Antimicrobial Resistance. COM (2011) 748
- WHO Global action plan on antimicrobial resistance. 2015. Document WHA68/2015/REC/1, Annex 3.

EU RAA

Project idea

1. **Country:**

Czech Republic

2. **Project title:**

Quality of edible insects produced under European rearing conditions

3. **Project link to the EFSA Strategy topics:**

Topics *3. Common data collection/surveillance scheme* and *6. Allergenicity/food allergens in general*, priorities *15. Microbial food pathogens (in general)* and 27. *Food supplements risk/benefits (generally)*

4. **Project description:**

Insects are a nutritionally interesting material, and may be included among the common diet of consumers in EU countries in the future. They could also be used as a nutritional supplement for special diets for example for athletes. Inclusion of potentially suitable species of insects into the normal diet requires defined and standardized conditions of their rearing as well as the detailed monitoring of their composition. Nutritional and hygienic quality of edible insects varies in a wide range depending on the origin, species, rearing conditions and other factors. Though the EFSA has already assessed hygienic and toxicological risks related to edible insects, more research on their composition and nutrient profile should be carried out in order to be able to fully implement edible insects as food into the EU legislation documents. Therefore the project will focus on the assessment of dietary important as well as risky compounds and microbiota in edible insects in relation to the defined farming conditions, feed composition, developmental stage of insects and their sex.

5. **Organisations involved:**

Czech University for Life Sciences Prague (CULS), Mendel University in Brno (MENDELU) and The Tomas Bata University in Zlín (TBU)

6. **Related documents:**

EFSA, Risk profile related to production and consumption of insects as food and feed, EFSA Journal, 13 (2015) 4257

EU RAA

Project idea

1. **Country:**

Czech Republic

2. **Project title:**

The fate of cholesterol in thermally processed meat food and monitoring of oxysterols formation

3. **Project link to the EFSA Strategy topics:**

Topic 3. Common data collection, priority 8. Harmonisation of methods for risk assessment of chemical contaminants

4. **Project description:**

Cholesterol is susceptible to oxidation and formation of oxysterols, which could have a negative health effect. The level of oxysterols increases during food processing, including culinary treatment and storage. The formation and distribution of oxysterols will be studied in real food samples prepared under different conditions (temperature, time) and in relation with their composition.

5. **Organisations involved:**

Czech University for Life Sciences Prague (CULS) and Institute of Chemical Technology Prague (ICT)

EU RAA

Project idea

1. **Country**

Czech Republic

2. **Project title:**

Plant substances with potential use in crop production and their fate in environment

3. **Project link to Delphi priorities/EFSA Strategy topics**

EFSA strategy 2020: Strategic objective 3 - Build the EU's scientific assessment capacity and knowledge community. Foster the growth of the EU and international risk assessment community

DELPHI: 21. Better understand biological organisms and plant substances used in crop protection (reducing the need for chemicals, e.g. pesticides)

4. **Project description**

Finding alternative substances to current synthetic pesticides and their implementation to practice is long term and demanding process.

The project will aim to find out new plant substances with potential to be included in the list of approved "basic substances" (EC Regulation 1107/2009). It will evaluate their fate in the plants and environment. It will create the international multidisciplinary network to share current knowledge about plant novel pesticides. In frame of international cooperation faster and novel techniques to evaluate the fate of the plant substances in environment could be discussed and developed. Moreover, dissemination of the information about the basic substances and legislative frame of their use on the national and international level would be in the scope of the project.

5. **MS organization involved**

Czech University of Life Sciences Prague

Further institutions on national level - TBD: probably Ministries of Environment, Agriculture, Czech Agriculture and Food Inspection authority

Foreign institutions involved in the project: TBD

6. **Project planning timeline**

TBD

7. **Link to related documents (if any)**

EU RAA

Project idea

1. **Country**

Czech Republic

2. **Project title:**

Inter-species and strain differences of probiotic bifidobacteria depending on the host environment

3. **Project link to the EFSA Strategy topics:**

Topic 7- Aggregated exposure; priority 12 – Systems for monitoring and characterising microbes isolated from food, environment and human illness cases

4. **Project description:**

Bifidobacteria are an important commensal bacterial group of animal and human microbiota, and are also widely used as health-promoting microorganisms (probiotics). However, the molecular mechanisms as to how these bacteria positively impact on host health are far from completely understood. Members of the genus Bifidobacterium are very homogenous group, but some of their properties can be species and host specific. We therefore assume that bifidobacteria are able to adapt and expanded their function properties, especially in case of host and diet changes or dysbiosis. Molecular-genetic and phenotypic analysis of multi-host bifidobacterial species isolated from various hosts will be used to locate properties indicative their ability to adapt to the host environment.
Project Aims The aim of this project is to highlight the genetic and functional features of bifidobacteria using genomic and ecology-based information, mainly focused on adaptation and special function properties of multi-host species Bifidobacterium animalis ssp. and Bifidobacterium longum ssp.

5. **Organisations involved:**

The Czech University of Life Sciences, Department of Microbiology, Nutrition and dietetics; bunesova@seznam.cz

EU RAA

Project idea

1. **Country**

Czech Republic

2. **Project title:**

Localisation of allergenic proteins in food

3. **Project link to the Delphi priorities / EFSA Strategy topics**

Delphi study: Topic 6. Allergenicity/food allergens in general (risk assessment and management) C N

4. **Project description:**

Food allergens present, with regard to the increasing number of allergic reactions, growing problem. It is therefore essential to deal with this topic and to try to find methods helping us to clarify the behavior and their localization in foodstuffs.
It is necessary to study the localization of allergens in food with regard to subsequent use of the findings as a basis for description and understanding of masking of allergenic epitopes through a food production process, as one of the ways to decrease the allergenicity of foods.
The aim of the project is to determine the localization of selected allergenic proteins in the food matrix by imaging techniques and to prove their inactivation or masking with regard to the production technology used.

5. **MS organisation(s) involved:**

University of Veterinary and Pharmaceutical Sciences Brno
Contact: Matej Pospiech (mpospiech@vfu.cz)

6. **Potential partner organizations at national or EU level:**

TBD

Template for first joint projects ideas under the EU RAA

1. **Country:**

Denmark

2. **Project title:**

Development and implementation of Risk-Benefit Assessment in foods

3. **Project link to the Delphi priorities / EFSA Strategy topics**

Add reference to the Delphi priority topic listed in the Annex B of the EU RAA paper and/or EFSA Strategy topics (particularly the objective under the heading 'Prepare for future risk assessment challenges').
The EU RAA paper is accessible on the DMS here:
https://dms.efsa.europa.eu/otcs/cs.exe?func=ll&objaction=overview&objid=15782409
and the EFSA Strategy can be found on the EFSA Web site here :
http://www.efsa.europa.eu/sites/default/files/corporate_publications/files/strategy2020.pdf

4. **Project description:**

Risk-benefit assessment (RBA) is a relatively new discipline that integrates scientific knowledge on nutrition, toxicology and microbiology with human epidemiology, using common health metrics. A number of European projects within the risk-benefit assessment of foods have been conducted. These involved developing methods and modelling frameworks, and have led to considerable progress in the risk-benefit area that made it possible to perform risk-benefit assessments built on sound scientific principles. In addition, all projects identified a wide range of remaining challenges, as well as perspectives and opportunities deriving from new developments within other research fields.

Building on these, we aim at forming a consortium consisting of researchers working in the RBA arena in different European Union Member States, and gather, develop and harmonize approaches for risk-benefit problem-formulation and -solving.

The specific **objectives** are:
• To further develop tools for the risk-benefit assessment (RBA) of health effects of foods, food ingredients and diets.
• To create a joint platform for EU Member State activities related to the development and implementation of risk-benefit assessment.

- To develop methods to broaden the scope of RBA, including for example economy and sustainability.
- To select and apply risk-benefit questions that are pertinent across countries within the EU.
- To develop a harmonized framework that can be applied to data from different countries.

Project Activities will consist of research activities (method development and case studies), workshops (where project participants and experts from different MS exchange progress and ideas), development of tools and training. The methods to be developed and applied will take advantage of the range of MS's data collected and compiled by EFSA, such as food consumption and food contamination data.

This project will build on a Risk Benefit Assessment Symposium to be hosted and organized by DTU with the support of EFSA in Copenhagen, March 2017, which has the aims of harmonizing concepts and terminology with RBA, discuss challenges and opportunities for research in the area, and pave the way further developments. The participants of the symposium will represent institutions in EU Member States with an interest or active in the field, and are foreseen to form the core of the future collaboration.

Expected impact of the project:
This project will help further developing and establishing RBA as a tool to provide scientific evidence to inform risk management decisions in the area of food safety and nutrition at a national or regional level. Furthermore, the collaborations to be established will provide a unique opportunity to establish consortia for research idea-generation and application development for future H2020 calls.

5. **MS organisation(s) involved:**

National Food Institute, Technical University of Denmark:
Morten Poulsen, morp@food.dtu.dk
Maarten Nauta, maana@food.dtu.dk
Sara Pires, smpi@food.dtu.dk

Other MS organizations to be involved include ANSES, BfR and RIVM, however, participation will be open to all Art. 36 organizations.

6. **Project planning timeline:**

Start date 1 September 2017, duration 3 years.

7. **Link to related documents (if any):**

Template for first joint projects ideas under the EU RAA

1. **Country:**

France

2. **Project title:**

Improvement and monitoring of the food products nutritional quality: promote reformulations on fat, sugars and salt

3. **Project link to the Delphi priorities / EFSA Strategy topics**

Delphi priority 3: Common data collection /surveillance scheme

Food products reformulation is mentioned pages 132 and 166 of the Final report on Scoping study Delivering on EU food safety and nutrition in 2050 - Scenarios of future change and policy responses of the European Commission Directorate General for Health and Consumers, mentioned p9 the EFSA Strategy topics:

https://ec.europa.eu/food/sites/food/files/safety/docs/final_report_scoping_study_en.pdf

4. **Project description:**

To optimise food products reformulations at the European level to reduce salt, fat and sugars.

To maintain and develop European links in the field of nutrition and food reformulation, already engaged with the European Joint action (EU Health Programme 2014-2020) "JANPA – Joint action on nutrition and physical activity" (http://www.janpa.eu/). A JANPA workpackage is especially focused on Food and nutritional information and monitoring, to share, in the different participating countries, the best practices on how the nutritional information on food is gathered and used for nutritional policy. The use of these best practices will contribute to the improvement of the nutritional food quality within and between countries by creating a virtuous circle among the food providers. In particular, pilot studies are conducted in Romania and Austria, to collect, at the branded product level (as is done in France in the Oqali project), the nutritional information on selected foods, to harmonize the analysis and presentation of the data, and to test the use of this information to create virtuous circle about food reformulation among manufacturers.

The aim of this project is to continue the European food nutritional comparison, already engaged within JANPA (with France, Austria, Romania), by involving additional countries.

In order to promote food products reformulations, according to the French Oqali model, the aim is to:

- collect, at the branded product level, the nutritional information on selected foods,
- harmonize the analysis and presentation of the data,

- create a "virtuous circle" about food reformulation among manufacturers, especially on fat, sugars and salt reduction.

5. **MS organisation(s) involved:**
   Contact details (name and email) of the responsible national body(ies):
   ANSES - France
   Jean-Luc VOLATIER: jean-Luc.volatier@anses.fr
   Céline MENARD: celine.menard@anses.fr

   Several European countries were already involved in food products reformulation policy: http://ec.europa.eu/health/nutrition_physical_activity/docs/overview_nationalinitiatives_selectednutrients_en.pdf

   Potentiel partners:
- RIVM_Netherlands
- IBEC_Irish
- AGES_Austria
- BBU_Romania

6. **Project planning timeline:**
   Suggested start date of the project is end of 2017 (after the end of JANPA)
   Duration: one to two years according to the number of participants

7. **Link to related documents (if any):**

EU food safety and nutrition in 2050
Final report on Scoping study Delivering on EU food safety and nutrition in 2050 - Scenarios of future change and policy responses of the European Commission Directorate General for Health and Consumers:
https://ec.europa.eu/food/sites/food/files/safety/docs/final_report_scoping_study_en.pdf

High level group on nutrition and physical activity of the European commission:
http://ec.europa.eu/health/nutrition_physical_activity/high_level_group/index_en.htm
http://ec.europa.eu/health/nutrition_physical_activity/docs/ev20090714_wp_en.pdf
http://ec.europa.eu/health/nutrition_physical_activity/docs/euframework_national_nutrients_en.pdf

EU Action Plan on Childhood Obesity 2014-2020
Improve the reporting on the nutritional food quality is also an aim topic of the Action 7 of the EU Action Plan on Childhood Obesity 2014-2020:
http://ec.europa.eu/health/nutrition_physical_activity/docs/childhoodobesity_actionplan_2014_2020_en.pdf

European Union's Health Programme (2014-2020)
In this context, a Joint Action on Nutrition and Physical Activity_ JANPA is implemented at the European level (Grant agreement n°677063) and funded by the European Union's Health Programme (2014-2020): http://www.janpa.eu/

Priorities of the Netherlands and Slovakian presidencies of the Council of the European Union:
http://webershandwick.be/wp-content/uploads/2015/12/Dutch-Presidency-Memo-FINAL.pdf
Food Product Improvement: Roadmap for Action on Food Product Improvement. Dutch Presidency EU Conference Amsterdam, 22 February 2016

Oqali (France): https://www.oqali.fr/oqali_eng/

JANPA – workpackage 5 on nutritional information: http://www.janpa.eu/work/wp5.asp

Template for first joint projects ideas under the EU RAA

1. **Country:**
   FRANCE

2. **Project title:**
   Wildlife disease surveillance

3. **Project link to the Delphi priorities / EFSA Strategy topics**
   C/ Microbiological priorities 18/ zoonosis in general
   D/ Environmental priorities 19/ improving information on the occurrence and spread of harmful organisms

4. **Project description:**
   Shared infections are multi-host infections caused by any kind of transmissible pathogen where at least one wild and one domestic host species can be relevant for infection maintenance. Shared infections matter because many are zoonotic; because of their impact on animal health and consequently on livestock production; and because of their adverse effects on conservation and on game production. The underlying drivers of disease emergence and of infection prevalence, such as changes in land use, in animal management or climate (Gortazar et al. 2014) keep on creating appropriate conditions for infection spread and maintenance among European wildlife, potentially generating conflicts (Thulin et al. 2015). In addition, specific human-mediated risk factors such as translocations and feeding or changes in hunting effort are also likely to persist, further facilitating wildlife population growth (e.g. Massei et al. 2015) and pathogen spread over a broad range of host species and geographical regions.

   Wildlife disease surveillance is nowadays an integral component of general animal health surveillance in many European countries and at least for selected diseases of particular relevance (e.g. rabies, classical swine fever - CSF, African swine fever - ASF, high pathogenic avian influenza - HPAI). Surveillance of wildlife needs specific tools adapted to non-domestic animals (for example for bovine tuberculosis in badgers, deers or foot and mouth diseases, etc…). France conducted for more than 20 years, disease surveillance of their wild animal populations. But this surveillance is more likely to detect the presence of infectious and zoonotic pathogens and the development of syndromic surveillance would improve the system and reactivity.

5. **MS organisation(s) involved:**
   As interested parties: ANSES (Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail) / ONCFS (Office National de la Chasse et de la Faune Sauvage)

6. **Project planning timeline:**
   More than 2 years

7. **Link to related documents (if any):**

Template for first joint projects ideas under the EU RAA

1. **Country:**
   FRANCE

2. **Project title:**
   Plant pests ranking process for prioritization of risk management actions in the EU

3. **Project link to the Delphi priorities / EFSA Strategy topics**
   The project enhances the collaboration of risk assessors from different Member States in terms of sharing expertise and best practices in pest risk ranking models. It is in line with EFSA 2020 strategic objective 3. Moreover, the outcome of the project allows the EU to respond effectively to any coming risk related to plants pests which is in compliance with strategic objective 4.

4. **Project description:**
   In the recent years, numerous plant pests ranking models were developed in several countries all around Europe and few (not to say only one) offer scope at the European level. Given the intensification of international trade in plant products and the movement of such products within the EU, it seems essential that risk management at the EU level could be undertaken following a risk assessment at the same scale. The main objective of the project is thus come up with a unique model of plant pests ranking for the EU community. Thus, the project shall involve risk assessment units of Member States that already have developed such models of plant pests ranking for their countries. It could also include other partners such as EPPO, the European Commission and other stakeholders on the area of plant health. More precisely, the activities to be undertaken are (i) state of the art of the models currently available in the EU Member states, (ii) best practices in pest risk ranking models currently available, (iii) building a risk ranking model for the EU with a stress on structured scientific data that enables their re-use. The outcome of the project will be a computer-based pest risk ranking model (with database, user interface, user guide and technical report). Furthermore, the project offers a framework to put into practice the conclusions achieved during the joint EFSA-EPPO Workshop: Modelling in Plant Health – how can models support risk assessment of plant pests and decision-making? (session 6) scheduled on December 2016.

5. **MS organisation(s) involved:**
   French Agency for Food, Environmental and Occupational Health and Safety ANSES – Plant Health Laboratory – Expertise and Biological Risks Unit. expertise.lsv@anses.fr

6. **Project planning timeline:**
   Suggested start date and duration: 2017-2020

7. **Link to related documents (if any):**
   - Joint EFSA-EPPO Workshop : Modelling in Plant Health – how can models support risk assessment of plant pests and decision-making?

   https://www.efsa.europa.eu/fr/events/event/161212

Template for first joint projects ideas under the EU RAA

Project idea 1)

1. **Country:**

Germany

2. **Project title:**

Further steps towards integration of data from total diet studies in dietary exposure assessments

3. **Project link to the Delphi priorities / EFSA Strategy topics**

EFSA Strategy 2020, operational topic 2: Develop and implement harmonised methodologies and guidance documents for risk assessment across the EU and internationally

Delphi study: Topic 3 Common data collection /surveillance scheme;

4. **Project description:**

A cross-cutting issue for dietary exposure assessment is the availability of harmonised data. It is proposed that EFSA takes the lead in Europe to foster further development of the TDS approach in Europe. BfR would be happy to take an active role in this process.

5. **MS organisation(s) involved:**

As interested party: The Federal Institute for Risk Assessment (BfR), 3@bfr.bund.de, Potential partner organizations at national or EU level: TBD

6. **Project planning timeline:**

TBD

7. **Link to related documents (if any):**

Project idea 2)

1. **Country:**

   Germany

2. **Project title:**

   Capacity building of microbial Next Generation Sequencing in Europe

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 13 Improve the use of genetic data (e.g. from whole genome sequencing) for risk assessment of microbiological contaminants

4. **Project description:**
   Next generation sequencing (NGS) technology for decoding at the nucleic acid level entire bacterial genomes has the potential to revolutionise diagnostic molecular typing approaches in Europe and worldwide. Microbial whole genome sequencing provides the opportunity to perform high-resolution e.g. bacterial strain characterization and identification using a single universal technique. The method significantly reduces time to results but also increases the information available and will improve understanding of bacterial pathogens in epidemic and outbreak situations.
   The aim of the project is to build a network to increase NGS capacities and to harmonise analysis pipelines in food and veterinary laboratories across Europe. This includes concepts for setting up databases for long-term storage of NGS data in the institutions, elaboration of harmonized working flows (SOPs), exchange of scientists between laboratories for training, ring-trials and definition of minimal quality requirement on NGS data and data reporting for phylogenetic studies of pathogenic isolates. The currently public available data analysis pipelines will be explored and their parameters compared.

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 4@bfr.bund.de; Potential partner organizations at national or EU level: TBD

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 3)

1. **Country:**

   Germany

2. **Project title:**

   Identification of emerging food-borne pathogens

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 1 Methods and systems for identifying emerging food risks (e.g. new food-borne diseases)
   Topic 15 Microbial food pathogens (in general)

4. **Project description:**
   Outbreak events due to foodborne pathogens including toxins (e.g. *Salmonella, Campylobacter, Listeria, E. coli, Bacillus*) may be complex and difficult to verify. Therefore, appropriate rapid diagnostic tools are needed to immediately assess such epidemic or pandemic events and to take necessary countermeasures. This approach is closely associated with targeted on-field investigations in different relevant matrices related to feed, food, environmental and clinical samples and the analysis of data by use of appropriate software tools.

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 4@bfr.bund.de; Potential partner organizations at national or EU level: TBD

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 4)

1. **Country:**

   Germany

2. **Project title:**

   Hepatitis E virus in pork and pork products

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 16 Food-borne viruses (in general) (e.g. Hepatitis A and Norovirus in fruit and vegetables)

4. **Project description:**
   Hepatitis E virus (HEV) is a zoonotic pathogen with increasing importance in Europe. Pork and pork products are suspected to represent major vehicles for transmission of the virus to humans. However, risk assessment is hampered by missing data on distribution and infectivity of HEV in the distinct food matrices. Therefore, scientific projects on the development of methods for characterization and detection of infectious HEV in food should be enforced. The methods should thereafter be applied to study the distribution of HEV in pork and pork products in Europe and to assess the infection risk by consumption of these products. BfR would be happy to contribute to such a project.

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 4@bfr.bund.de; Potential partner organizations at national or EU level: TBD

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 5)

1. **Country:**

   Germany

2. **Project title:**

   NextGen Food Safety Knowledge Integration Framework

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 15 Microbial food pathogens (in general)
   Topic 8 Harmonisation of methods for risk assessment of chemical contaminants
   Topic 3 Common data collection / surveillance scheme

4. **Project description:**

   Integration, re-use of existing food safety knowledge (FSK, experimental data, models, software code): major bottleneck in the area of food safety (FS) risk assessment (RA). Integration and wide-spread application of available knowledge would be possible if harmonized standards for annotation and storage of FSK would exist and would be adopted by the scientific community. Example: experimental growth data, inactivation, survival of microorganisms in food → currently no internationally accepted data exchange formats rendering creation and maintenance of open community data repositories like the Combase (difficult, highly resource intensive).
   Project aims: development of necessary infrastructural resources (FS data standards, models, software including ontology-based controlled vocabularies; software tools, services supporting adoption of proposed standards). Open, community-driven, curated FSK Repository (FSKR) will be generated illustrating benefits of this approach. On the basis of BfR's experiences from establishment of open FS Model Repository (openFSMR), domain of predictive microbial modelling (Filter et al., 2015) this work will extend the BfR strategy to other RA domains including integration of legacy knowledge. Sub-tasks:

   1. Joint development: international standard format (FSK-ML) to encode FSK (data, models, simulation scenarios, software code)
   2. Joint development: software tools allowing export, import and validation of FSK-ML files. Creation of new FSK-ML extensions to be integrated into risk assessment modelling tools used by FS experts (e.g. R, Excel, @Risk, FDA-iRISK, KNIME etc.).
   3. Establishment: technical infrastructure for a European open, community driven E-FSKR including advanced functionalities like "search", "download", "simulate", "validate".
   4. Establishment: Editorial Board and "consolidation plan" for the E-FSKR
   5. Refactoring existing data, models or RA software modules from partners or scientific publications and provisioning them via the EFSKR portal

Outcomes:

- internationally accepted standard (FSK-ML) for FSK (data, models, software code)
- several open-source software tools supporting adoption of FSK-ML by scientific and RA community
- curated online FSKR which can be used ad hoc (like www.biomodels.org or http://icra.foodrisk.org/)

5. MS organisation(s) involved:

As leading party: The Federal Institute for Risk Assessment (BfR), 4@bfr.bund.de; Potential partner organizations at national or EU level: institutions in SE, DK, HU, NO, ES, GR, FR, UK

6. Project planning timeline:

3 year project

7. Link to related documents (if any):

Project idea 6)

1. **Country:**

   Germany

2. **Project title:**

   Risk/benefit of botanicals/herbs in food supplements

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 5 Risks/benefits of botanicals/herbals in food supplements

4. **Project description:**
   By the use of QSAR and state of the art PBPk modelling for hazard and risk assessment and substance grouping we will aim to filtrate the most relevant botanical/herbs for R/B assessment. Intern BfR project regarding QSAR and Mode of action investigations are already ongoing. External projects supported by the Deutsche Forschungsgemeinschaft (DFG) will support the aim. Risk assessment approaches ongoing (e.g. pyrrolizidine alcaloids).

5. **MS organisation(s) involved:**

   As leading party: The Federal Institute for Risk Assessment (BfR), 5@bfr.bund.de; Potential partner organizations at national or EU level: DTU Food (DK) and ANSES (FR)

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 7)

1. **Country:**

   Germany

2. **Project title:**

   Cumulative exposure assessment

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 9 Cumulative exposure assessment (e.g. for pesticide residues/ PAHs)

   Topic 24 Cocktail effects (the health risk assessment of chemical mixtures e.g. food additives)

4. **Project description:**
   The ongoing EUROMIX project aims in developing an experimentally verified, tiered strategy for the risk assessment of mixtures of multiple chemicals derived from mul-tiple sources across different life stages. The BfR will provide the proof of principle approach to investigate mixtures and set up grouping test systems as well as exposure calculations of mixtures with the aim to implement cumulative assessment groups for risk assessment of mixtures. The assessment of cocktail effect is a major task in the BfR Food Safety Department, e.g. for contaminants.
   The Pesticides Safety Department of BfR is dealing with the harmonisation and implementation of the derived testing strategies into regulatory practice.

5. **MS organisation(s) involved:**

   As leading party: RIVM (NL); Partner organizations at national or EU level: The Federal Institute for Risk Assessment (BfR), 5@bfr.bund.de, 6@bfr.bund.de and many other European institutes as ANSES (FR), ICL (UK), MATIS (IS), NIPH-NO (NO), SGL (CY) (s. https://www.euromixproject.eu/partners/)

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 8)

1. **Country:**

   Germany

2. **Project title:**

   Development standard biomarker

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 26: Developing standard biomarkers of intake and/or exposure to contaminants

4. **Project description:**
   Projects are ongoing in den Department Food Safety in regard to set up new biomarker (from blood or urine sources) e.g. for process induced contaminants and for botanicals. The research is implemented in the European Human biomonitoring program (HBM4EU).

5. **MS organisation(s) involved:**

   As leading party: The Federal Institute for Risk Assessment (BfR), 5@bfr.bund.de; Potential partner organizations at national or EU level: ANSES (FR) and more

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 9)

1. **Country:**

   Germany

2. **Project title:**

   Food supplement risk/benefits

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 27 Food supplements risk/benefits (generally)

4. **Project description:**
   BfR is focusing on risk assessment of food supplements in particularly of botanicals. We have set up a list of botanicals which may be used for food supplements and compounds which may not be used at all.

5. **MS organisation(s) involved:**

   As leading party: The Federal Institute for Risk Assessment (BfR), 5@bfr.bund.de; Potential partner organizations at national or EU level: DTU Food (DK), ANSES (FR) and more

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 10)

1. **Country:**

   Germany

2. **Project title:**

   Determinations of allergen thresholds, measurements of allergens in food

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 28 Determination of allergen thresholds (clinical studies), in conjunction with immunochemical measurements of allergens in foods

4. **Project description:**
   Long time experience in the detection of allergens by using screening and specific approaches on the DNA and protein level. Ongoing projects in this field in regards to set up fast methods and to fil the gap for some allergens such as for crustacea.

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 5@bfr.bund.de; Potential partner organizations at national or EU level: TBD

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 11)

1. **Country:**

   Germany

2. **Project title:**

   Data compilation of pesticide processing factors

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 3 Common data collection/ surveillance scheme

4. **Project description:**
   An extensive data base on pesticide processing factors is established to enhance the quality of pesticide exposure assessments, but also to provide reliable information to food control authorities to support their decisions on whether pesticide residue levels found in processed products are in compliance with statutory limit values.

   This data compilation is intended to enhance the quality of pesticide exposure assessments conducted by BfR, but also to provide reliable information to food control authorities of the Federal States to support their decision on whether pesticide resi-due levels found in processed products are in compliance with statutory limit values.

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 6@bfr.bund.de; Potential partner organizations at national or EU level: RIVM (NL)

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 12)

1. **Country:**

   Germany

2. **Project title:**

   Identification of induced type of sensitization by application of pesticide active substances and co-formulants by a combination of in vitro pre-screening tests and (Q)SAR-models

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 6 Allergenicity / food allergens in general (risk assessment and management)

4. **Project description:**
   A combination of in vitro pre-screening tests and (Q)SAR-models for identification of the induced type of sensitization by application of pesticide active substances and co-formulants is going to be developed

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 6@bfr.bund.de; Potential partner organizations at national or EU level: TBD

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 13)

1. **Country:**

   Germany

2. **Project title:**

   Improvement of risk assessment for residents and bystanders

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 8 Harmonisation of methods for risk assessment of chemical contaminants

4. **Project description:**
   Improvement of risk assessment for residents and bystanders by collecting relevant new data for dermal and inhalation exposure via spray drift in orchards and grape-vine including different application technique and distances from the source thereby filling a data gap mentioned in the EFSA guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment for plant protection products.

5. **MS organisation(s) involved:**

   As leading party: The Federal Institute for Risk Assessment (BfR), 6@bfr.bund.de; Potential partner organizations at national or EU level: TBD

6. **Project planning timeline:**

   At least a two year project

7. **Link to related documents (if any):**

Project idea 14)

1. **Country:**

   Germany

2. **Project title:**

   Comparative Cytotoxicity of Plant Protection Products and their Active Ingredients

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 9 Cumulative exposure assessment (e.g. for pesticide residues/ PAHs)

   Topic 24 Cocktail effects (health risk assessment of chemical mixtures, e.g. food additives)

4. **Project description:**
   Since 2016 research activities are ongoing regarding "Comparative Cytotoxicity of Plant Protection Products and their Active Ingredients". This research project aims to investigate differences in acute toxicity between complete plant protection products (PPPs) including co-formulants and their active substances in vitro using human and murine cell lines. The further goal of the project is the development of a prediction model to allow the prediction of acute toxicity of PPPs due to differences in the cytotoxic potential of active substances and their related PPPs in addition to the use of available in vivo data for the active substances. After validation such an in vitro test system could be used as part of a tiered testing strategy to replace acute in vivo studies for risk assessment of PPPs and to address potentially occurring data gaps. Furthermore, this test system addresses the problem of inter-species differences as human cell lines are employed.

5. **MS organisation(s) involved:**

   As leading party: The Federal Institute for Risk Assessment (BfR), 6@bfr.bund.de; Potential partner organizations at national or EU level: TBD

6. **Project planning timeline:**

   3 years

7. **Link to related documents (if any):**

Project idea 15)

1. **Country:**

   Germany

2. **Project title:**

   Computational toxicology

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 1-7 (Generic) and Topic 8-11 (Chemical risk assessment)

4. **Project description:**

   Use of QSAR and state of the art PBPK (Physiologically Based Pharmacokinetic) modelling (for hazard and risk assessment and substance grouping). The aim would be the initiation of appropriate pilot studies and PhD projects for the assessment of substances and mixtures used in consumer products (e. g., cosmetic products, toys) and chemicals under REACH. PBPK modelling is used to support classical risk assessments by filling data gaps and by reducing uncertainties, especially for issues such as in vitro-in vivo extrapolation, route-to-route extrapolation, interspecies extrapolation, and extrapolation to sensible population groups such as children.
   Another focus would be the initiation of a pilot study on the suitability of omics data for prioritisation, for decision making and for grouping/ categorisation. Aspects covered comprise data quality (i.e., establishment of quality criteria), data transformation and storage and the processing and usage of data from heterogenous sources. A specific focus would be data analysis. For instance it is important to carefully assess how to derive reliable biomarkers for the affected toxicity pathways from combined omics data sets.

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 7@bfr.bund.de, Potential partner organizations at national or EU level: health authorities in Norway and Denmark

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 16)

1. **Country:**

   Germany

2. **Project title:**

   Non-plastics in Food Contact Materials (FCM)

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 1-7 (Generic) and Topic 8-11 (Chemical risk assessment)

4. **Project description:**

   1) Identification and assessment of substances migrating from rubber materials into food.

   2) Assessment of substances transferring from printed food contact materials into food with the aim of deriving health based limit values.

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 7@bfr.bund.de, Potential partner organizations at national or EU level: RIVM (NL) (for the first project) and BLV (CH) (for the second project).

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 17)

1. **Country:**

   Germany

2. **Project title:**

   Endocrine disruptors

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 1-7 (Generic) and Topic 8-11 (Chemical risk assessment)

4. **Project description:**

   Identification and assessment of potential endocrine disruptors in consumer products and chemical as registered REACH. Projects of interest should address hazard screening and substance prioritisation in vitro as well as strategies for the risk assessment of such substances as single compounds and as part of mixtures or environmental background exposure.

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 7@bfr.bund.de, 6@bfr.bund.de. Potential partner organizations at national or EU level: DTU (DK) and RIVM (NL).

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 18)

1. **Country:**

   Germany

2. **Project title:**

   Detection of multiple chemical contaminants in the same assay

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 1-7 (Generic) and Topic 8-11 (Chemical risk assessment)

4. **Project description:**

   Assessment of mixture/contaminant effects in vitro. Project aims include the devel-opment and application of mixture effects on toxicologically relevant key pathways in vitro. Such assays are invaluable for substance categorization, hazard assessment and testing prioritisation. The latter is particularly important as background and mixture effects are often to manifold as to allow comprehensive a priori testing in vivo.

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 7@bfr.bund.de; Potential partners are located in Japan and Denmark.

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 19)

1. **Country:**

   Germany

2. **Project title:**

   Nanomaterials/nanotechnology

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 1-7 (Generic) and Topic 8-11 (Chemical risk assessment)

4. **Project description:**

   Dosimetry of nanomaterials (NM). While it is widely accepted that NM surface area seems to be a good dose metric to derive dose-response relationships established toxicological dose metrics are routinely based on mass or molarity. This is a major challenge for the assessment of NM in toxicological studies in vitro as well as for in vivo. Project should aim at several case studies to analyze available data sets and to come forward with a suggestion on dosimetry for NM in a regulatory context. Furthermore, the issue of in vitro/in vivo correlations with respect to dosimetry needs more attention. The aim would be to look at available in vivo data and then to derive meaningful corresponding in vitro doses under consideration of different modelling approaches, which then need to be confirmed.
   Furthermore development of reliable and robust analytical methods for the determination of nanoparticles in complex matrices relevant for consumer products is urgently needed for the implementation of the current European regulation

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 7@bfr.bund.de; Potential partner organizations at national or EU level: DTU (DK), RIKILT (NL) and JRC (Italy).

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 20)

1. **Country:**

   Germany

2. **Project title:**

   Microplastics in the food chain

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 1-7 (Generic) and Topic 8-11 (Chemical risk assessment)

4. **Project description:**

   The characterisation of microplastic particles including the discrimination of micro-plastic particles from other environmental components aims to elucidate the fate of these particles. With this knowledge a more differentiated risk assessment could be achieved.

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 7@bfr.bund.de, 8@bfr.bund.de, Potential partner organizations at national or EU level: TBD

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 21)

1. **Country:**

   Germany

2. **Project title:**

   Cocktail effect

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 1-7 (Generic) and Topic 8-11 (Chemical risk assessment)

4. **Project description:**

   Assessment of mixture effects in vitro. Project aims include the development and application of mixture effects on toxicologically relevant key pathways in vitro (please also refer to point 18.).

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 7@bfr.bund.de; 5@bfr.bund.de, 6@bfr.bund.de, Potential partners are located in Denmark and Norway.

6. **Project planning timeline:**

   Suggested start date and duration

7. **Link to related documents (if any):**

Project idea 22)

1. **Country:**

   Germany

2. **Project title:**

Screening for the detection of hormone-like substances in food packaging

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 1-7 (Generic) and Topic 8-11 (Chemical risk assessment)

4. **Project description:**

   Identification and assessment of potential endocrine disruptors in food packaging and food contact materials. Current and future projects address hazard screening and substance prioritisation in vitro as well as strategies for the risk assessment of such substances as single compounds and as part of mixtures.

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 7@bfr.bund.de; Potential partners are Denmark and the Netherlands.

6. **Project planning timeline:**

   Suggested start date and duration

7. **Link to related documents (if any):**

Project idea 23)

1. **Country:**

   Germany

2. **Project title:**

   Process factors in risk assessment

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 8: Harmonisation of methods for risk assessment of chemical contaminants

4. **Project description:**

   One practice in the legislation of contaminants is the establishment of maximum levels for unprocessed products at first instance for optimized monitoring and controlling at an early stage in the supply chain. Risk assessments - particular the exposure estimation via consumption of processed food - need to acknowledge processing factors appropriately. The effect of processing might also be important for the handling of maximum levels/enforcement levels in certain instances. Therefore the scientific analysis of processing factors in the food chain should be promoted in order to support a harmonised assessment.

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 8@bfr.bund.de, Potential partner organizations at national or EU level: TBD

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 24)

1. **Country:**

   Germany

2. **Project title:**

Impact of global food and feed supply chains on the spread of harmful organisms

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 19 Improving information on the occurrence and spread of harmful organisms

4. **Project description:**

   According to EFSA, between one third and one half of all human infectious diseases have a zoonotic origin. In addition, about 75% of the new diseases that have affected humans over the past 10 years have originated from animals or products of animal origin. Feed is indeed recognised as one potential vector of livestock contamination, which can eventually trigger foodborne outbreaks. Therefore, reducing contamination of feed might reduce the number of food-borne disease. However, feed chains are quite complex and continuously adapt to many factors like changed market supply and demand, climate change, technology.
   The following project aims to improve prevention and response by investigating harmful organisms and feed chains.
   1) Current and emerging harmful organisms
   Current as well as assumed emerging harmful organisms that hold an zoonotic risks will be
   1a) evaluated and described according to their
   1b) characteristics as well as behavior in feedstuff,
   1c) available detection methods and their limits in feedstuff as well as
   1d) occurrence and prevalence in feedstuff in Europe and worldwide.
   2) Global feed supply chains
   2a) Feed ingredients will be evaluated and described regarding their properties to include harmful organisms whether due to processing or (re-)contamination and
   2b) factors of the global feed chains, which might have an impact on the safety of feed and food chains, will be identified . In addition,
   2c) trade values and trade networks will be analysed regarding their changes (e.g. seasonal, annually, period of 10 years) and evaluated whether there are vulnerable points in the network. Based on that
   2d) failure scenarios will be analysed as well as possible consequences will be evaluated.
   3) Prevention and response
   3a) The status quo of legal and industry-driven regulations on national, EU and international level will be united in a database and
   3b) possible processing steps will be evaluated regarding their properties to act as decontamination methods.
   3c) the availability of data of establishments dealing with feedstuff will be evaluated and their site will be virtualized.

3d) feed chain safety
influencing factors (2a) will be ranked according to their relevance and, in terms of fast response,

5. **MS organisation(s) involved:**

As interested party: The Federal Institute for Risk Assessment (BfR), 8@bfr.bund.de; Potential partner organizations at national or EU level: FU Berlin, SVA (Sweden), UCo (Denmark)[7], TEAGASC (Ireland)
Integrated Stakeholders: DVT, FEFAC

6. **Project planning timeline:**

Suggested start date and duration: 2017-2020

7. **Link to related documents (if any):**

[7] University of Copenhagen

Project idea 25)

1. **Country:**

   Germany

2. **Project title:**

Alternaria toxins – analytical challenges and impact of processing

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 11 Emerging contaminants

4. **Project description:**

   In general any novel contaminant with a significant impact on consumers´ safety should be considered as emerging risk until the substance is comprehensively assessed. As such the mycotoxins formed by Alternaria species mainly on tomato, several other fruits, grains and sunflower seeds belong to the class of emerging contaminants. To date, more than 70 Alternaria toxins have been reported. Whilst for some lead toxins (i.e. alternariol and alternariol monomethylether) toxicological data already exist, other compounds formed by Alternaria species such as the altertoxins reliable data are completely lacking or only rarely available. Consequently, in 2011 EFSA came to the conclusion that a comprehensive evaluation of the Alternaria toxins is not yet possible. This assumption was not only based on the lack of reliable toxicological data but also on an incomplete data base concerning the occurrence of Alternaria toxins in food and feed. In recent years, BfR amongst others has undertaken several efforts to gather occurrence data and to characterize novel Alternaria toxins. Moreover, the impact of fruit and grain processing on the toxin content is still unknown. There are some indications that Alternaria toxin concentrations may increase under favourable processing conditions and may be stable during food and feed processing. Therefore, Alternaria toxins are part of the objective in a BfR project dedicated to the investigation of the fate of mycotoxins during fruit juice production. And quite recently, EFSA has been re-quested by the European Commission to carry out a human exposure assessment to Alternaria toxins for which especially occurrence data that are generated since the last scientific opinion in 2011 could be used (Mandate M-2016-0014).

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 8@bfr.bund.de; Potential partner organizations at national or EU level: TU München, Ghent University (BE), EURL Mycotoxins

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 26)

1. **Country:**

   Germany

2. **Project title:**

   Emerging Contaminants

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 11 Emerging contaminants

4. **Project description:**

   During the last years a lot of natural toxins were detected as so called “emerging contaminants” in the food chain and effected consumers, producing companies and competent authorities. Although most of these contaminants are known since many years incomplete data concerning their occurrence (exposure of consumers) and toxicology complicated an appropriate risk assessment procedure.
   Most recently tetrodotoxins have been detected in European bivalve mollusks. This toxin is known to occur in pufferfish and was restricted to warmer climates but seems now to become a European topic as it was repeatedly detected in shellfish harvested in the Northern Sea as well as in the Mediterranean Sea.
   Other examples are secondary plant metabolites like pyrrolizidine-, tropane-, or chinolizidine alkaloids. These toxins are known to have harmful effects on human health and were detected in several types of food. BfR and EFSA elaborated several risk assessments for these compounds. It was concluded that there is a risk for consumers but it was also pointed out that several scientific uncertainties persist and data gaps should be filled by further research.
   A common problem of all of these natural toxins is that they usually exist as mixtures of structurally related compounds and several active congeners occur in parallel. In general only for a limited number of them analytical standards can be purchased and detection strategies have to be developed to determine their occurrence and to assess their toxicological effects.

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 8@bfr.bund.de; Potential partner organizations at national or EU level: ANSES (FR), IFREMER (FR), RIKILT (NL)

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):**

Project idea 27)

1. **Country:**

   Germany

2. **Project title:**

   Accompanying risk communication activities for the topics of the EU risk assessment agenda and risk perception research

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 1 Methods and systems for identifying emerging food risks (e.g. new food-borne diseases; Topic 2 Development of standard risk-benefit assessment methods (of foods); Topic 5 Risks/benefits of botanicals/herbals in food supplements; Topic 27 Food supplements risk/benefits (generally); Topic 18 Zoonoses (in general, including bio-hazards, MRSA etc.

4. **Project description:**

   The BfR is ready to start risk communication activities for the topics of the EU risk assessment agenda and risk perception research as well as studies regarding risk benefit analysis for the above mentioned topics

5. **MS organisation(s) involved:**

   As interested party: The Federal Institute for Risk Assessment (BfR), 2@bfr.bund.de, Potential partner organizations at national or EU level: TBD

6. **Project planning timeline:**

   TBD

7. **Link to related documents (if any):** http://www.bfr.bund.de/en/risk_communication-1834.html

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (1)

2. **Project title:**

Evaluation of listeriosis risk due to the presence of L. monocytogenes in non-prepackaged cooked ready-to-eat meat products

3. **Project link to the Delphi priorities / EFSA Strategy topics**

15. Microbial food pathogens (in general) [Microbiological hazards]

4. **Project description:**

Risk Assessment studies have shown that deli meats
represent a relative higher risk for listeriosis among ready-to-eat (RTE) foods. Although most available data on Listeria monocytogenes in RTE foods are related with pre-packaged food products, an increased consumption of non pre-packaged foods (e.g., sliced meat products) handled by the employees in commercial retail establishments has also been recognized as a risk contributing factor, leading to greater consumer exposure to foodborne pathogens including L. monocytogenes. Surveillance and epidemiological investigations have demonstrated a potential association between food handling at retail and food service establishments and the incidence of foodborne illness. Although the incidence, persistence, and transmission dynamics of L. monocytogenes in food-processing environments and pre-packaged foods have been studied extensively, data regarding the role of RTE foods handled at retail in transmission of this pathogen to humans are limited and
often concern fermented products, despite the consumption of such products, which is expected to be considerable. Considering the statistically significant increasing
trend of human listeriosis reported in the EU over the period 2008-2014 and the fact that the non-prepackaged RTE cooked meat products a likely to offer a suitable environment for L. monocytogenes growth, the evaluation of the impact of such non-prepackaged RTE foods handled at retail is of great importance.
The main goal is assess the exposure of consumers to L. monocytogenes related to the consumption of non-prepackaged RTE cooked meat products handled at retail food service environments in Greece, where contamination occurred during handling (e.g., due to contaminated surfaces in the slicing equipment). The developed exposure assessment model will be based on prevalence and concentration at the retail level, growth during domestic storage and consumption data. The model will
be also used to evaluate mitigation strategies at both retail and domestic level such as better hygiene conditions at retail level, regulation of a use-by date for non-prepackaged RTE cooked meat products and improvement of domestic storage temperature.

5. **MS organisation(s) involved:**

GR (EFET, AUTH)

6. Project planning timeline:

Expected start date: 1/2/2016
Expected duration: 24

7. Link to related documents (if any):

8. Other info

Funding source? The proposed project has already secured funding

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (2)

2. **Project title:**

Development and application of genetic methods for traceability in animal food products

3. **Project link to the Delphi priorities / EFSA Strategy topics**

1. Methods and systems for identifying emerging food risks (e.g. new food-borne diseases) [Horizontal issues]

4. **Project description:**

The project aims to evaluate the current state in Greek (and Balkan countries) market as regards true reporting of species identity in various animal meat products (involving pork, beef, buffalo, sheep, horse, chicken and fish species). There is currently few work done in this areas. Genetic methods involving PCR, Real-time PCR and Next generation sequencing approaches will be developed and applied.

5. **MS organisation(s) involved:**

Hellenic Food Authority (involved in sampling as well as co-financing)

6. **Project planning timeline:**

Expected start date: 9/1/2016
Expected duration: 36

7. **Link to related documents (if any):**

8. **Other info**

Funding source? We will seek for funding from national resources

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (3)

2. **Project title:**

DNA database construction of Greek dairy animal local breeds

3. **Project link to the Delphi priorities / EFSA Strategy topics**

3. Common data collection/ surveillance scheme [Horizontal issues]

4. **Project description:**

The assurance of traceability of geographic origin of products constitutes a difficult scientific field with important however legal and financial consequences. The advent of DNA sequencing techniques and related SNP-chip methodologies has permitted howeverr the detailed description of various breeds and varieties in the agrofood sector. In this project a DNA database will be constructed for Greek local dairy sheep and goat breeds with the purpose of certification of authenticity of their products. SNP chip methodologies will be used.

5. **MS organisation(s) involved:**

School of Veterinary -Prof Arsenos -Expertise in sheep and goat farm systems

6. **Project planning timeline:**

Expected start date: 4/1/2016
Expected duration: 48

7. **Link to related documents (if any):**

8. **Other info**

Funding source? We will seek for funding from national resources

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (4)

2. **Project title:**

Collection of processing techniques and processing factors for the estimation of magnitude of pesticide residues in processed commodities.

3. **Project link to the Delphi priorities / EFSA Strategy topics**

9. Cumulative exposure assessment (e.g. for pesticide residues/ PAHs) [Chemical hazards]

4. **Project description:**

The pesticide processing factors are of necessary to be established and officially accepted for the reliable risk assessment for the consumer but also as a tool for the post application monitoring of pesticide residues in the different processed commodities. BPI has participated in the EFSA GP/EFSA/PRAS/2016/01, where the main overall objective of the project is to develop a database of processing types and processing factors compatible with the EFSA food classification and description system FoodEx 2. BPI will provide processing information for crops grown in Southern Europe and evaluate processing studies relied on in EFSA's Conclusions, Scientific Reports and Reasoned Opinions.

5. **MS organisation(s) involved:**

Benaki Phytopathological Institute (Greece), Federal Institute for Risk Assessment (Germany), National Institute for Public Health and the Environment (Netherlands)

6. **Project planning timeline:**

Expected start date:
Expected duration:

7. **Link to related documents (if any):**

http://www.efsa.europa.eu/en/art36grants/article36/gpefsapras201601

8. **Other info**

Funding source? The proposed project has already secured funding

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (5)

2. **Project title:**

Study of the wild/weed plants as reservoir of phytoplasmas infecting fruit-trees.

3. **Project link to the Delphi priorities / EFSA Strategy topics**

19. Improving information on the occurrence and spread of harmful organisms [Environmental hazards]

4. **Project description:**

The project proposed involves studies on the epidemiological role of the wild plants and weeds as sources of phytoplasma inoculum that can be transmitted to fruit trees by insect vectors. Determination of alternate host plant species and seasonable fluctuation of the concentration of the phytoplasmas in these plants will enhance our survey strategies and contribute to efficient application of eradication measures against phytoplasmas.

5. **MS organisation(s) involved:**

All MS interested in phytoplasma-related diseases of fruit trees.

6. **Project planning timeline:**

Expected start date:
Expected duration: 24

7. **Link to related documents (if any):**

8. **Other info**

Funding source?

Comments? The proposed subject is related to previously implemented projects at BPI:
EU funded project 'COST ACTION 873' and national funded project 'BIOKARPOS'

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (6)

2. **Project title:**

Xylella Fastidiosa Active Containment Through a multidisciplinary-Oriented Research Strategy (XF-ACTORS)

3. **Project link to the Delphi priorities / EFSA Strategy topics**

19. Improving information on the occurrence and spread of harmful organisms [Environmental hazards]

4. **Project description:**

The project XF-ACTORS involves research work on innovative means to detect early and prevent entry of Xylella fastidiosa, as well as to control both this bacterial pathogen and its insect vectors under different phytosanitary conditions (pest-free areas, buffer zones, infected zones). The project aims also to maximize the impacts of other related EU research programs (e.g. POnTE, EUPHRESCO) by ensuring coordination and integration amongst research groups and networks with long lasting experience and involved in ongoing international research programs on Xylella fastidiosa.

5. **MS organisation(s) involved:**

- BELGIUM: Vlaams Gewest (VLO); Joint Research Centre - European Commission (JRC); International Federation of Organic Agriculture Movements European Union Regional Group (IFOAM EU GROUP); Sustainable Communication Aisbl (S-COM)
- BRAZIL: Centro de Citricultura (IAC)
- COSTA RICA: University of Costa Rica (UCR)
- FRANCE: Centre International de Hautes Etudes Méditerranéennes (C.I.H.E.A.M.), Institut National de la Recherche Agronomique (INRA); European and Mediterranean Plant Protection Organization (EPPO)
- GERMANY: Julius Kuhn-Institut Bundesforschungsinstitut fur Kulturpflanzen (JKI),
- GREECE: Benaki Phytopathological Institute (BPI)
- ITALY: Consiglio Nazionale delle Ricerche (CNR); Università degli Studi di Bari Aldo Moro (UNIBA); Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia agraria (CRA); Centro Euro–Mediterraneo sui Cambiamenti Climatici Scarl (CMCC); ENBIOTECH Srl; CIVI-ITALIA
- PORTUGAL: Instituto Politécnico de Bragança (IPB)
- SPAIN: Agencia Estatal Consejo Superior De Investigaciones Cientificas (CSIC); Instituto Valenciano de Investigaciones Agrarias (IVIA); Instituto Andaluz de Investigaciony Formacion Agraria Pesquera Alimentaria Y de la Producion Ecologica (IFAPA); AINIA
- TAIWAN: National Taiwan University (NTU)
- THE NETHERLANDS: Nederlandse Voedsel En Waren Autoriteit; Stichting Nederlandse Algemene Kwaliteit Sdienst Tuinbouw (NAKTUINBOU)

- UK: Natural Environment Research Council (NERC); The University of Salford (USAL); RUSSEL IPM LTD
- USA: The Regents of the University of California (UC)

6. Project planning timeline:

Expected start date: 1/1/2016
Expected duration: 48

7. Link to related documents (if any):

8. Other info

Funding source? The proposed project has already secured funding

Comments? The project is funded under the H2020 Programme–EU.3.2.1.1.–Increasing production efficiency and coping with climate change, while ensuring sustainability and resilience–Topic SFS-09-2016 – Spotlight on critical outbreak of pests: the case of Xylella fastidiosa.

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (7)

2. **Project title:**

Assessment of the risk posed by emerging non-European Citrus tristeza virus (CTV) isolates to the Greek and European citriculture

3. **Project link to the Delphi priorities / EFSA Strategy topics**

19. Improving information on the occurrence and spread of harmful organisms [Environmental hazards]

4. **Project description:**

Citrus tristeza virus (CTV, genus Closterovirus) is the causal agent of devastating epidemics particularly of sweet orange trees grafted on sour orange rootstocks. Although virus European strains can be relatively efficiently controlled by the use of tolerant rootstocks, non-European isolates that cause stem pitting (SP) cannot and they represent a real threat for European citriculture. We intend to characterize further the new CTV isolates biologically and molecularly, identify their actual spread and suggest measures for virus containment, thus protecting citrus industry at local and European level.

5. **MS organisation(s) involved:**

6. **Project planning timeline:**

Expected start date:
Expected duration:

7. **Link to related documents (if any):**

EFSA PLH Panel (EFSA Panel on Plant Health), 2014. Scientific Opinion on the pest categorisation of Citrus tristeza virus. EFSA Journal 2014; 12(12):3923, 32 pp. doi:10.2903/j.efsa.2014.3923
Owen, C., Mathioudakis, M., Gazivoda, A., Gal, P., Nol, N., Kalliampakou, K., Figas, A., Bellan, A., Iparaguirre, A., Rubio, L. and Livieratos, I. (2014). Evolution and Molecular Epidemiology of Citrus tristeza virus on Crete: Recent Introduction of a Severe Strain. J Phytopathol, 162: 839–843. doi:10.1111/jph.12266.
Varveri, C., Olmos, A., Pina, J. A., Marroquin, C., & Cambra, M. (2015). Biological and molecular characterization of a distinct Citrus tristeza virus isolate originating from a lemon tree in Greece. Plant Pathology, 64: 792-798.

8. **Other info**

Funding source? We will seek for funding from national resources
Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (8)

2. **Project title:**

The application of Next-Generation Sequencing technology for the detection and diagnosis of non-culturable organisms: viruses and viroids (NGS-DETECT).

3. **Project link to the Delphi priorities / EFSA Strategy topics**

19. Improving information on the occurrence and spread of harmful organisms [Environmental hazards]

4. **Project description:**

The existing molecular methods (such as PCR, real-time PCR, Sanger sequencing) for the detection and the identification of non-culturable organisms and particularly plant pathogenic viruses and viroids do not always lead to the correct identification of the pathogen especially in case of multiple infection. Deep sequencing (next generation sequencing) is a powerful technology which is intended to be a broad 'framework' project encompassing both the application of novel diagnostic technology for the detection of viruses and viroids. NGS leads to rapid and reliable holistic virus identification without a prior knowledge of the pathogen's sequence, which is needed for the development of innovative, knowledge-based solutions for plant production.
The overall goal of this project is the development and adaptation of standardised NGS technologies for the detection and identification of viruses and viroids. This includes the development of standardised methods for nucleic acid preparations that are cheap, reliable and applicable to a broad range of plant material (e.g. leaves, stems, roots, fruits, etc.) and the preparation of the nucleic acids extracts for NGS (library preparation). In addition, common bioinformatic pipelines will be adapted or developed to allow reliable and quick analysis of data. Furthermore, the developed protocols will be validated by inter-laboratory comparisons. Reference sequence data will be used to optimise the bioinformatic pipelines and will be made available to public databases such as Q-bank.
The project will address the following objectives:
1. Development of sample preparation strategies

Different nucleic acids populations can be targeted by NGS. Commonly used are double-stranded RNA (dsRNA) molecules or small-interfering RNA (siRNA) molecules that are enriched in virus- or viroid-sequences in infected plants. Is the reference genome of the host matrix available or plant rRNAs and mRNAs removed, total RNA extracts can be used for NGS. Circular single-stranded DNA viruses (such as nanoviruses or begomoviruses) can also be enriched by rolling-circle amplification (RCA). Additionally, the matrix might have an influence on the success of nucleic acid extraction, as plant substances such as phenols can interfere with the extraction and/or subsequent applications. The aim is to develop standardised extraction protocols that are inexpensive, quick and applicable to a broad range of plant material (leaves, stems, fruits, pollen, seeds) from vegetables, ornamentals, grapevine and other plants.

2. Development of libraries

For NGS, nucleic acids need a preparation depending on the sequencing platform chosen ("library development"). Commercial suppliers of NGS offer to develop libraries but this is often costly. Commercial kits are also available but are also relatively expensive. The aim is to develop alternative library preparations that are reliable, cost-effective and suitable for multiplexing of different samples per sequencing run.

3. Comparison of sequencing platforms

NGS technologies are evolving and progressing very rapidly. The first NGS technology (454 sequencing) is not offered anymore by commercial suppliers although it was only introduced a few years ago. Currently, the most offered technologies include Illumina's HiSeq/MiSeq, Ion Torrent, Roche GS Flex and PacBio. However, the platforms differ considerably in their error rate, and in the number and length of reads obtained. Different sequencing platforms will be compared for their suitability for reliable diagnostics.

4. Development of bioinformatic pipelines for data analysis

NGS technologies provide a huge amount of sequencing data that need to be analyzed. Depending on the nucleic acid population targeted, the bulk of the generated sequence data might come from the host matrix or from contaminating yeasts or bacteria and needs to be excluded from further analyses. Based on existing bioinformatic pipelines such as VirTool or VirusDetect, common work-flows will be developed to automatise the analysis of sequence data on a whole range of commercially available sequence analysis software.

5. Validation of complete work-flows (from extraction to data analysis)

For the abovementioned objectives 1 to 4, developed protocols will be validated through inter-laboratory comparisons.

6. Inclusion of reference data in public databases

The data obtained through this project will have major implications on quarantine policies and certification schemes. It is very likely that the NGS technologies will allow detecting novel viruses and viroids and variants of existing and well-characterized pathogens. It is therefore important to make the data available to public databases such as Q-bank. Additionally, the data will help to optimise bioinformatic pipelines such as VirTool or VirusDetect.

The project is of high priority for the country and currently funded by BPI in the frame of Euphresco network.

5. MS organisation(s) involved:

- Julius Kühn-Institut, Germany (Coordinator)
- Instituut voor Landbouw- en Visserijonderzoek, Belgium
- Canadian Food Inspection Agency, Canada
- Aarhus University, Denmark
- ANSES, France
- INRA, France
- FERA, UK
- Benaki Phytopathological Institute, Greece
- National Food Chain Safety Office Directorate of Plant Protection, Hungary
- AlphaTaxa, Dublin City University, Ireland
- Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria, Italy
- Nederlandse Voedsel-en Warenautoriteit, The Netherlands
- All-Russian Plant Quarantine Centre, Russia
- IVIA, Spain
- International Potato Center, Peru

6. Project planning timeline:

Expected start date: 7/1/2016
Expected duration: 36

7. Link to related documents (if any):

8. Other info

Funding source? The proposed project has already secured funding

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (9)

2. **Project title:**

Development and implementation of early detection tools and effective management strategies for invasive non-European and other selected fruit fly species of economic importance (FLY DETECT)

3. **Project link to the Delphi priorities / EFSA Strategy topics**

19. Improving information on the occurrence and spread of harmful organisms [Environmental hazards]

4. **Project description:**

Diptera: Tephritidae exert a huge economic impact on fruit and vegetable production worldwide because of direct damage on fruit and vegetable commodities and quarantine regulations. The project is proposed to focus on species of tephritid fruit flies that are key pests to a large number of crops in the Mediterranean region, such as Ceratitis capitata (Mediterranean fruit fly, Medfly), or are considered as important invasive species, such as Bactrocera zonata (Peach Fruit Fly, PFF), Bactrocera dorsalis complex (Oriental Fruit Fly, OFF), and Myiopardalis pardalina (Melon Fruit Fly, MFF). These species, which are already present in some parts of Europe (e.g. MFF), are a threat as they may become established (e.g. PFF) in the Mediterranean basin, posing a risk to the horticultural crops and agriculture of Central and Southern Europe, and are considered quarantine pests for most European countries (cf. EPPO Alert List, A1 or A2 Lists). The pests under study have substantial interceptions in EUROPHYT database each year.

The project aims at (i) developing and implementing novel detection and interception tools and strategies for the above species, (ii) exploring their current geographical distribution in the countries involved in the proposed project as well as their potential range expansion to northern European countries by focusing on basic biological data, (iii) determining the host status of specific fruit of economic importance, and (iv) developing novel pest risk reduction options both at the place of production and at the entry points.

The project is of high priority for the country and currently funded by BPI in the frame of Euphresco network.

Expected results

- Overview of the geographical distribution of the fruit-fly species under study in the countries participating in the proposed project
- Development and implementation of tools for early and rapid detection of fruit flies in agricultural commodities
- Management strategies for selected fruit commodities applied at both the place of production and place of entry in order to reduce the risk of introduction and spread within the EU and the Mediterranean region of non-European tephritid fruit flies
- Status of specific fruit (e.g. kiwi fruit) as potential hosts of these pests

- Cold hardiness ability

of these pests, which is essential for projecting the potential spread of those species and performing accurate PRAs

5. **MS organisation(s) involved:**

- Benaki Phytopathological Institute, Greece (Coordinator)
- Österreichische Agentur für Gesundheit und Ernährungssicherheit, Austria
- B'lgarska Agentsja po bezopasnost na khranite, Bulgaria
- Department of Agriculture Food and the Marine, Ireland
- Institute of Soil Science, Agrotechnology and Plant Protection, Bulgaria

6. **Project planning timeline:**

Expected start date: 4/1/2016
Expected duration: 36

7. **Link to related documents (if any):**

8. **Other info**

Funding source? The proposed project has already secured funding

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (10)

2. **Project title:**

Consensus detection and identification protocol for Acidovorax citrulli on cucurbit seeds

3. **Project link to the Delphi priorities / EFSA Strategy topics**

19. Improving information on the occurrence and spread of harmful organisms [Environmental hazards]

4. **Project description:**

The project aims to provide validated methods, protocols and procedures for the detection of A. citrulli in seed lots (melon and watermelon), as seed is the main pathway for entry and spread of the pathogen into new areas. Additionally, the project will include research on a possible semi-selective agar medium for the isolation and purification of A. citrulli, in case of an outbreak occurring in the field or in a nursery.

This will be achieved through:

a. Development, implementation and validation of a robust detection protocol for A. citrulli possibly present in melon and watermelon seed lots. Such protocol will be based on an effective pathogen extraction method from seeds, an efficient DNA extraction and purification procedure and a Real Time PCR.

b. Development, implementation and validation of a semi-selective agar medium for the isolation of A. citrulli from symptomatic plant tissue.

c. A method for the identification and characterization of A. citrulli isolates, belonging to all three genotypes reported worldwide.

d. Implementation of a pathogenicity assay on melon and watermelon seedling to assess and confirm both identity and virulence of putative A.citrulli isolates.

The project is of high priority for the country and currently funded by BPI in the frame of Euphresco network.

Expected results:

- A consensus protocol for the detection of A. citrulli on cucurbit seeds (watermelon and melon).
- A validated semi-selective agar medium for the isolation of A. citrulli from symptomatic plant material.
- Validated identification methods (test performance studies for detection and identification tests).
- A simple and sensitive pathogenicity assay on melon and watermelon seedlings.

5. **MS organisation(s) involved:**

- Università di Modena e Reggio Emilia, Italy (Coordinator)
- ANSES, France

- National Food Chain

Safety Office Directorate of Plant Protection, Hungary

- Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria, Italy
- Nederlandse Voedsel-en Warenautoriteit, The Netherlands
- All-Russian Plant Quarantine Centre, Russia
- Benaki Phyotpathological Institute, Greece
- Plant Protection Central Research Institute, Turkey

6. Project planning timeline:

Expected start date: 7/1/2016
Expected duration: 36

7. Link to related documents (if any):

8. Other info

Funding source? The proposed project has already secured funding

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (11)

2. **Project title:**

Assessment of a generic method for the detection of Begomoviruses

3. **Project link to the Delphi priorities / EFSA Strategy topics**

19. Improving information on the occurrence and spread of harmful organisms [Environmental hazards]

4. **Project description:**

Recently several reports were published in Europe and in the Mediterranean basin about infection of new emerging Begomoviruses inducing severe damage or presenting a threat for main crops i.e Tomato leaf curl New Delhi virus ToLCNDV in Spain, Italy, and Tunisia. Moreover, due to the new emerging Begomovirus worldwide and the large distribution of their vector in all tomato producing area (open field and greenhouse), at least two other Begomoviruses, absent in Europe, should be considered as a potential threat for the tomato production: Tomato mottle virus (ToMoV) and Tomato leaf curl virus (ToLCV). Their distribution being closely related to the distribution of their vector Bemisia tabaci, their introduction and dissemination should be monitored to avoid their spread.

Early diagnostic of Begomoviruses was based on symptomatology, but the variability of biotic of abiotic factors susceptible to induce similar symptoms does not facilitate a correct identification. The ELISA might also be used but with little success due to low antigenicity of the viral coat protein (CP). However, the high level of homology between the CPs of different Begomoviruses allows the design of generic primers for detection of these previously listed and in some extends to some others regulated and non-regulated Begomoviruses. The need for a reliable and common protocol based on the PCR technic appears to be necessary.

Due to the risk, many of these Begomoviruses have already been regulated or added to the EPPO pest lists. Despite this, there is no test available for the detection of a wide range of Begomovirus allowing an easy identification. A standard for TYLCV and ToMoV (EPPO PM7/50) already exists, but it wasn't evaluated for other Begomoviruses.

The project is of high priority for the country and currently funded by BPI in the frame of Euphresco network.

Expected results: The main expected result of this project is to get reliable validation data in order to propose a common test for the detection of the main regulated or threatening Begomoviruses and its associated strains. This could contribute to the improvement of diagnostic protocols (e.g. EPPO diagnostic standard 7/50 (1) on TYLCV and Tomato mottle begomoviruses).

5. **MS organisation(s) involved:**

- ANSES, France (Coordinator)
- AGES, Austria

- Benaki

Phytopathological Institute, Greece

- National Institute of Biology, Slovenia
- SASA, UK
- Consiglio per la Ricerca in Agricoltura e l'Analisi dell' Economia Agraria, Italy
- INIAV, Portugal
- International Potato Center, Peru

6. Project planning timeline:

Expected start date: 1/1/2017

Expected duration: 24

7. Link to related documents (if any):

8. Other info

Funding source? The proposed project has already secured funding

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (12)

2. **Project title:**

Test performance studies of detection tests of Pospiviroides on Solanaceae

3. **Project link to the Delphi priorities / EFSA Strategy topics**

19. Improving information on the occurrence and spread of harmful organisms [Environmental hazards]

4. **Project description:**

A whole range of solanaceous species are affected by viroid infections. Depending on the crop and time of infection, the viroid infection can lead to a total crop loss. However, in many ornamental solanaceous plants, viroid infections are unnoticed because of symptomless infection. Quick, sensitive and reliable viroid detection and identification are necessary e.g. to fulfil quarantine requirements for the shipment of solanaceous plant material. In recent years, new viroid species were discovered, which need also be correctly detected and identified. Several diagnostic protocols using molecular biology methods (RT-PCR, RT-qPCR) are currently available. This project aims to carry out a test performance study on different viroid detection tests to validate these protocols.

The project is of high priority for the country and currently funded by BPI in the frame of Euphresco network.

Expected results: Existing detection protocols for viroids will be evaluated during test performance studies.

5. **MS organisation(s) involved:**

- Julius Kühn-Institut, Germany (Coordinator)
- ANSES, France
- ILVO, Belgium
- National Institute of Biology (NIB), Slovenia
- Benaki Phytopathological Institute, Greece
- Canadian Food Inspection Agency-Plant Research & Strategies, Canada
- SASA, UK
- INIAV, Portugal
- APHIS-USDA, USA
- International Potato Center

6. **Project planning timeline:**

Expected start date: 1/1/2017

Expected duration: 24

7. **Link to related documents (if any):**

8. **Other info**

Funding source?

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (13)

2. **Project title:**

Identification of potato cultivars resistant to pathotype 18(T1) of the quarantine fungus Synchytrium endobioticum

3. **Project link to the Delphi priorities / EFSA Strategy topics**

19. Improving information on the occurrence and spread of harmful organisms [Environmental hazards]

4. **Project description:**

Synchytrium endobioticum, the causal agent of potato wart disease, is a quarantine fungus (Council Directive 2000/29/EC) with increasing importance for the European potato production, due to its severe negative impacts on yield, its persistence in soil for more than 30 years and the lack of effective chemical control. Strict phytosanitary regulations and cultivation in the safety zone of potato varieties resistant to the corresponding pathotype(s) of the pathogen are the only effective measures for its containment and eradication. S. endobioticum was detected for the first time in Greece in two potato (Solanum tuberosum L.) fields in the rural area of Perithori (Kato Nevrokopi, Regional Unit of Drama) during the 2011 official surveys. The pathotype present in both fields was identified as 18(T1). In compliance with the EU and National legislation, phytosanitary measures are being implemented in the area, among which, demarcation of a safety zone (c. 200 ha) surrounding the infested fields and allowed to be planted only with potato varieties resistant to pathotype 18(T1). In the present study, official field trials of potato varieties for the evaluation of their resistance to the infection by the above pathotype were conducted during a 4-year period (2013-2016). The potato varieties tested each year belonged to two groups: (i) varieties grown commercially in Greece, and (ii) varieties reported as resistant to pathotype 18(T1), which had not been cultivated in Greece before. The agronomic performance of the resistant potato varieties under local conditions was also evaluated in field trials conducted outside the safety zone.

In addition to the official field testing for the identification of potato varieties resistant to the pathotype present in the area of the first disease outbreak in Greece [pathotype 18(T1)], bioassays were conducted under controlled environment conditions in order to evaluate the reaction of the potato varieties with field resistance to pathotype 18(T1) of S. endobioticum under high inoculum pressure.

The project is of high priority for the country and currently funded by the Ministry of Rural Development & Food.

5. **MS organisation(s) involved:**

- Benaki Phytopathological Institute, Greece
- Directorate of Agricultural Economy and Veterinary of the Regional Unit of Drama, Greece

6. Project planning timeline:

Expected start date: 12/6/2013
Expected duration: 36

7. Link to related documents (if any):

8. Other info

Funding source? The proposed project has already secured funding

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (14)

2. **Project title:**

Development of molecular methods for the identification of Synchytrium endobioticum pathotypes

3. **Project link to the Delphi priorities / EFSA Strategy topics**

19. Improving information on the occurrence and spread of harmful organisms [Environmental hazards]

4. **Project description:**

Synchytrium endobioticum, the causal agent of potato wart disease, is an EU regulated pathogen (Council Directive 2000/29/EC) and is classified as an A2 pest by the European and Mediterranean Plant Protection Organisation (EPPO). Following its establishment in an area, the only effective methods for its management are strict phytosanitary measures and cultivation in the safety zone of potato varieties resistant to the corresponding pathotype(s) of the pathogen. EPPO Standard PM 7/028(2) recommends various bioassays using a set of differential potato cultivars for the identification of five out of more than 40 pathotypes of S. endobioticum currently present in Europe. Furthermore, only four of the differential potato cultivars used for pathotyping are registered and commercially available. Moreover, these bioassays are time-consuming and may give inconclusive results, especially because of the appearance of new virulent pathotypes as a result of the continuous evolution of the pathogen. Molecular methods, on the other hand, would be much faster to perform and may give more conclusive results regarding the pathotypes of S. endobioticum present in an area. Identification of molecular markers for pathotyping is a tedious and long term process. As S. endobioticum is an obligate parasite and pathotyping is not harmonized, a joined effort at European level is required.
The project is of high priority for the country and currently funded by the Ministry of Rural Development & Food.

5. **MS organisation(s) involved:**

6. **Project planning timeline:**

Expected start date:
Expected duration:

7. **Link to related documents (if any):**

8. **Other info**

Funding source? The proposed project has already secured funding

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (15)

2. **Project title:**

Potential of natural compounds and microbial biocontrol agents to substitute pesticides for safer food production

3. **Project link to the Delphi priorities / EFSA Strategy topics**

21. Better understand biological organisms and plant substances used in crop protection (reducing the need for chemicals, e.g. pesticides) [Environmental hazards]

4. **Project description:**

Specific legislative provisions on low-risk active substances have been included in the Regulation on Plant Protection Products (Articles 22, 47), and are mentioned in the Dir. 2009/128/EC in IPM definition. BPI in the frame of different Projects e.g. FP7-COFREE, Hellenic GSRT- NanoBioEnviro has carried out research on minimizing risks in food production through the reduction of chemical pesticides use. In the past, selection of compounds/biocontrol agents (BCAs) had been carried out by BPI and other collaborating Institutes on the basis of their potential to be used in agricultural practice for the control of pests. Compounds of plant origin were tested as crude extracts and/or fractions for their efficacy in planta against plant pathogenic fungi, insects, and nematodes (definition of effective dose ranges). In the case of microbials, selected microorganisms were also tested for their efficacy in planta. Some of these compounds/BCAs were further tested for their ecotoxicological profile. Specifically, the potential toxic effects of selected novel alternative compounds/BCAs were studied on the indicator arthropods species Aphidius rhopalosiphi and Typhlodromus pyri as well as on the non-target soil indicator organisms Eisenia fetida and Enchytraeus albidus. In parallel, impact assessment procedures were developed/tested by BPI (LIFE+ ENVIRONMENT-SAGE10 & EcoPest projects), to assess the possible impacts of anthropogenic activities, such as application of pesticides, to the environment along with environmental monitoring of pesticide residues in different environmental compartments.
Future research priorities for BPI, among others, include:
i) the study of innovative products. The products to be studied will originate from a pool of pre-selected bioactive natural extracts of plant or microbial origin that have already been tested and will be studied furthermore for their mechanism of action against the targeted and selected non-targeted organisms. Emerging and state of the art technologies in the field of analytical chemistry, microbiology, entomology, molecular and systems biology, such as High Resolution Mass Spectrometry, metabolomics, data-mining, and bioinformatics will be utilised for studying novel biopesticides.
ii) the compilation of a priority list of compounds/BCAs that meet the criteria of Reg./2009/1107 regarding low risk active substances considering all available information regarding direct effect on pests, mode of action, induction of resistance responses in plants, production of metabolites in/onto plants etc. In this list, gaps in current knowledge will be elucidated.

iii) the study of the
ecotoxicological-toxicological profile of novel products and the survival patterns of selected microbials, in terms of viable and non-viable colony forming units onto plant surfaces and/or soil/air, depending on application scenarios and the prevailing environmental conditions (meteorological data).
iv) the selection and testing of compounds that could be used to fill in gaps in minor uses.
Possible funding for such a research could be obtained thought HORRIZON 2020 projects, National funding schemes in different MSs and EFSA.

5. **MS organisation(s) involved:**

Benaki Phytopathological Institute (BPI). Laboratories of Mycology, Biological Control, Toxicological Control and Chemical control of Pesticides.
Other EU Institutes involved:

- Julius Kühn-Institut (JKI),Bundesforschungsinstitut für Kulturpflanzen, Germany
- Forschungsinstitut für Biologischen Landbau Stiftung (FiBL), Switzerland
- Fondazione Edmund Mach (FEM), Italy

6. **Project planning timeline:**

Expected start date: 1/1/2017
Expected duration:

7. **Link to related documents (if any):**

8. **Other info**

Funding source? We will seek for funding from relevant Horizon 2020 calls

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (16)

2. **Project title:**

Study of the toxicity/beneficial role of bioactive natural compounds

3. **Project link to the Delphi priorities / EFSA Strategy topics**

5. Risks/benefits of botanicals/herbals in food supplements [Horizontal issues]

4. **Project description:**

A wide range of natural products mainly originating from the Greek flora, have been considered to contain bioactive compounds with beneficial properties for human health. Apart from the testing required for substantiating any argued health claim a major issue is the assessment of their toxicity and the identification of any potential hazardous properties.
BPI is currently engaged in the investigation of potential toxicity and/or antioxidant activity of bioactive compounds of olive, chios mastic gum, opuntia ficus indica extracts and propolis using already available methods. In parallel, ongoing research is conducted for the development of in vitro and in vivo alternative methods to assess the toxicity/beneficial role of bioactive natural compounds using established cell lines, primary cells or lower vertebrates.
The methods currently used or under development are the following: viability/cytotoxicity assay (MTT), genotoxicity assays such as comet assay & modified comet assay, micronucleus test, In cell western-γH2AX assay, antioxidant activity assessment, tunnel assay, neurite outgrowth test, gene expression assays. Also, alternative methods using zebra fish are currently under development and include assays for developmental toxicity, hepatotoxicity, embryotoxicity and endocrine toxicity.
Regarding to analytical chemistry methods, the chemical profile of propolis is studied using an established, targeted high performance liquid chromatography photo diode array-mass spectrometry method (HPLC-PDA-ESI/MS) for the screening of 59 bioactive compounds in propolis (manuscript submitted for publication).
The usage of in silico methods as well as proteomics and metabolomics such as non-targeted liquid chromatography high resolution mass spectrometry method (LC-HRMS), using an Orbitrap instrument, is being developed at BPI.
The study of natural products originating from the Greek and Mediterranean flora is of priority for BPI. Currently three PhD projects are ongoing on this topic at the Institute.

5. **MS organisation(s) involved:**

6. **Project planning timeline:**

Expected start date:
Expected duration:

7. **Link to related documents (if any):**

1.http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0100190&type=printable
2.https://www.thieme-connect.com/products/ejournals/abstract/10.1055/s-0035-1565445
3. http://www.lestudium-ias.com/fr/event/olive-bioactives-applications-and-prospects
4.https://www.thieme-connect.com/products/ejournals/abstract/10.1055/s-0035-1565852

8. Other info

Funding source? No funding sources has been identified yet

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (17)

2. **Project title:**

Cumulative exposure assessment (European Test and Risk Assessment Strategies for Mixtures – EuroMix) (Horizon 2020 project)

3. **Project link to the Delphi priorities / EFSA Strategy topics**

7. Aggregated exposure (via cocktail effects, but including environmental/ food exposure) [Horizontal issues]

4. **Project description:**

The aim of the EuroMix project is the development of a testing strategy for the risk assessment of chemical mixtures, considering as a basis the approaches currently followed by national, EU and international authorities further developed by state-of-the-art in vitro, in vivo and in silico tools. BPI has already contributed as a task leader in the creation of a list of chemicals (Chemical inventory, CI) of potential relevance for dietary cumulative risk assessment. This list includes pesticides, food contaminants, chemical migrants from food package materials, environmental pollutants, bioactive alkaloids, etc. Furthermore, BPI has contributed in the collection of toxicity data from all available sources (e.g. regulatory documents, open literature data, other scientific databases) for all chemicals included the CI and the development of the EuroMix Toxicity Database (ETDB). The CI and ETDB are integrated with the in-silico approaches for prioritisation of chemicals to be considered further in the proposed framework for mixture risk assessment. BPI is currently involved in the in vitro testing for liver toxicity and participates in the in vivo experimentation for developmental toxicity.

Further, BPI has participated in the organization and collection of relevant chemical concentration and consumption data at a National level, in the prioritization of the chemicals to be included in the mixture assessment based on exposure profiles and preformed aggregated and cumulative exposure assessments using probabilistic methods.

BPI is also involved in the preparation of an overview of how mixture testing and higher tier modelling are addressed in current regulatory toxicology and is actively involved in the preparation of a review report that will also include a proposal on they should ideally be addressed in the future. These concepts will be verified and finalised by the experimental and modelling data by the end of the project.

The development of appropriate methodology for the toxicological evaluation of mixtures has been considered at BPI for more than 10 years (Ph.D. M-P Goumenou). Now it is urgent for the evaluation of risk following exposure to several different pesticides as operator or worker as well as consumer of the different commodities, different sources and routes.

5. **MS organisation(s) involved:**

EuroMix participants include
22 beneficiaries from 16 countries linked to international organisations including WHO, FAO and EFSA.
RIVM (NL, coordinator), DLO (NL), ICL (UK), ANSES (FR), INRA (FR), INERIS (FR), UGENT (BE), FE (BE), BfR (DE), KI (SE), MATIS (IS), SGL (CY), NIJZ (SI), CZU (CZ), NIPH (NO), URV (ES), BPI (GR), UMIL (IT), DTU (DK), HSE (UK), ETHZ (CH), FERA (UK) (https://www.euromixproject.eu/partners/).

6. Project planning timeline:

Expected start date: 5/1/2015
Expected duration: 48

7. Link to related documents (if any):

8. Other info

Funding source?

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (18)

2. **Project title:**

Screening of available evidence on chemical substances for the identification of endocrine disruptors according to different options in the context of an Impact Assessment. Specific Contract SANTE/2015/E3/SI2.706218.

3. **Project link to the Delphi priorities / EFSA Strategy topics**

22. The impact of chemicals on the ecosystem (release of chemicals into the environment) [Environmental hazards]

4. **Project description:**

Specific legislative provisions on endocrine disruptors (EDs) have been included in the Regulation on Plant Protection Products (PPPR), the Regulation on Biocidal Products (BPR), the Regulation on Chemicals (REACH), the Cosmetic Products Regulation (CPR), the Water Framework Directive (WFD) and the Commission Proposal for a Regulation on Medical Devices. Under the PPPR and BPR, the European Commission (EC) was obliged to propose scientific criteria to identify EDs. In this context, the EC published a Roadmap describing four different options for the identification of EDs (EC, 2014). BPI was the sole contractor of the Joint Research Centre (JRC) of the EC to undertake the task of estimating the number and identity of the chemicals which would be included under each of the four options outlined in the Roadmap applying a screening methodology developed by JRC. BPI performed the screening of the available toxicological evidence on approximately 600 substances (348 PPPs, 96 BPs and 186 miscellaneous chemicals), estimating which substances would be potentially identified as EDs when applying the different options for the criteria detailed in the Roadmap. The screening was a desk-based work evaluating existing evidence and toxicological data, i.e. no additional data were generated for this work. The EC considered the outcome of this work to carry out an impact assessment to estimate the potential impacts associated to different options for criteria to identify EDs.
The available database could be potentially used for assessing further the cocktail effects of chemical mixtures with endocrine disrupting properties.
Both data collection on EDs as well as on other effects is priority of BPI. Furthermore, as regulatory body, the outcome foe ED identification and categorization as well as the validated testing methods and the evaluation of results is of priority for BPI.

5. **MS organisation(s) involved:**

IBF International Consulting (Brussels, Belgium) (Coordinator), Benaki Phytopathological Institute (BPI) (Greece), Joint Research Center (JRC) (Italy), DG-SANTE, EC.

6. **Project planning timeline:**

Expected start date: 5/1/2015

Expected duration: 14

7. Link to related documents (if any):

http://ec.europa.eu/health/endocrine_disruptors/docs/2016_impact_assessment_study_en.pdf

8. Other info

Funding source? The proposed project has already secured funding

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (19)

2. **Project title:**

Monitoring of pesticides, metabolites and other contaminants residues in bees and related apiculture matrices. Risk assessment for pollinators.

3. **Project link to the Delphi priorities / EFSA Strategy topics**

22. The impact of chemicals on the ecosystem (release of chemicals into the environment) [Environmental hazards]

4. **Project description:**

A broad range of contaminants is widespread in several environmental compartments. Consequently, organisms, and bees in particular, are potentially subjected to a substantial chemical stress that can provoke several toxicological effects. In this context, and considering the significance of bees as pollinators, BPI is engaged in the monitoring of pesticides and metabolites residues in bees (predominantly honeybees, usually after death incidents are reported), honey, pollen, and beeswax. Other emerging contaminants, apart from pesticides, are also considered. The methods currently used are the following: High-Performance Liquid Chromatography Tandem Mass Spectrometry (HPLC-ESI-MS/MS), Gas Chromatography Tandem Mass Spectrometry (GC-MS/MS). Currently, under development is an untargeted liquid chromatography high-resolution mass spectrometry method (LC-HRMS), using an Orbitrap instrument. The latter will further enhance BPI's capacity to embrace OMICS technology in the context of bio/and molecular markers investigation and development.

BPI coordinates a project (funded by EFSA under contract OC/EFSA/PRAS/2015/08) entitled "Collection and analysis of pesticide residue data for pollen and nectar".

Further interest in the forthcoming HORIZON 2020 call for bee health.

5. **MS organisation(s) involved:**

Benaki Phytopathological Institute (BPI) Greece, University of Athens, Greece.

6. **Project planning timeline:**

Expected start date:

Expected duration:

7. **Link to related documents (if any):**

1. https://www.ncbi.nlm.nih.gov/pubmed/24747255
2. https://www.efsa.europa.eu/en/tenders/tender/ocefsapras201508
3. http://www.tandfonline.com/doi/abs/10.1080/02772248.2016.1201674?journalCode=gtec20

8. **Other info**

Funding source? The proposed project has already secured funding

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (20)

2. **Project title:**

Pilot study regarding the occurrence of heavy metals in processed foods and the use of suitable conversion factors

3. **Project link to the Delphi priorities / EFSA Strategy topics**

3. Common data collection/ surveillance scheme

4. **Project description:**

Regulation 1881/2006 sets up maximum levels for certain contaminants in foodstuffs, most of them refer to the raw product. Regarding processed foods, article 2 of Regulation 1881/2006 is in force, requiring the use of conversion factors.

To our knowledge, at the EU level, there have been few only wide-range studies for the establishment of such factors (we are aware of 3 Spanish studies conducted between 2005 and 2007 - where a wide range of factors are indicated). In-house studies proposed by the industry are often judged inappropriate by the competent authorities, thus adding burden to the food safety system, creating confusion to the relevant FBOs and affecting – possibly detrimentally – the exposure of the consumer to a range or contaminants.

To address the situation we propose a pilot action focused on heavy metals including the following steps:

a) Collect occurrence data via official programmes, looking at the impact of processing on to the raw material, especially for highly consumed foodstuffs (e.g. canned fish, canned fruit and vegetables) and specify the corresponding contaminant conversion factors for a number of real-life processes.

b) Compile a set of guidelines for the industry, concerning all information a study should involve so that the competent authorities be able to consider as appropriate the factors indicated by such studies.

c) Present and discuss the outputs of this action to the relevant stakeholders via a series of workshops.

Potential impact:

a) The outputs for the study will help improve exposure assessment (and, therefore, risk assessment of heavy metals in processed food. The conversion factors identified may also apply to other contaminants exhibiting similar behaviour in equivalent food matrices.

b) The table of conversion factors and, more importantly, the guidelines for the production of such factors will help the industry towards better compliance to Reg. (EC) 1881/2006, will facilitate official control, enhance risk communication towards the industry and will improve the level of safety for the consumers.

5. **MS organisation(s) involved:**

6. **Project planning timeline:**

Expected start date: 6/1/2017
Expected duration:

7. **Link to related documents (if any):**

8. **Other info**

Funding source? No funding sources has been identified yet

Comments?

Template for first joint projects ideas under the EU RAA

1. **Country:**

Greece (21)

2. **Project title:**

Development of a database tool for assessing the risk of common food pathogens in foodstuffs

3. **Project link to the Delphi priorities / EFSA Strategy topics**

15. Microbial food pathogens (in general)

4. **Project description:**

The evaluation of the risk of pathogen contamination and growth in foodstuffs is a hazard regularly considered along all steps of a food production and depicted in the HACCP studies of FBOs. Further to that, current legislation sets limits to the occurrence of a number of pathogens in certain foodstuffs. Despite the fact that a considerable and expanding body of scientific and technical literature exists regarding pathogen prevalence and growth in a number of food matrices, the effective management of pathogens at the level of FBOs remains a challenge. This is mostly due to the limited resources that FBOs – and in particular SMEs – have available but also to the increasing complexity of the food chain. A publicly available tool for the evaluation of the risk of various foodborne pathogens, compiled using existing data, would facilitate FBO compliance to current legislation, reduce exposure of consumers to pathogens and help protect the health of vulnerable population groups.

Concept:

To create an online database tool allowing FBOs to evaluate the risk of pathogen growth in their food products as a function of their physico-chemical properties (i.e. pH, aw), their composition in terms of preservatives or antimicrobials, the temperature profile along the processing and distribution chain, the packaging key features (e.g., the use of MAP or vacuum). The tool would provide references to current legislation or common standards. In foods of particular importance (e.g., due to high consumption or high export volumes) additional prevalence and temperature data may need to be obtained. A similar study has been performed by ANSES for L. monocytogenes for selected foodstuffs.

Potential impact:

a) Better protection of consumer health in Greece (and elsewhere).

b) Better risk communication via increased awareness across SME FBOs regarding food formulation and food safety.

5. **MS organisation(s) involved:**

6. **Project planning timeline:**

Expected start date: 6/1/2017

Expected duration:

7. **Link to related documents (if any):**

8. **Other info**

Funding source? No funding sources has been identified yet

Comments?

First joint projects ideas under the EU RAA

1. **Country:**

Hungary

2. **Project title:**

Health technology assessment (HTA) methodology implementation to evidence-based food safety risk analysis

3. **Project link to the Delphi priorities / EFSA Strategy topics**

Project links to Delphi priorities:

- 2. Development of standard risk-benefit assessment methods (of foods)

Project links to EFSA Strategy Topics:

- Prepare for future risk assessment challenges:
  - Development and gradual integration in EFSA guidance of new approaches in prioritised chemical and biological risk assessment areas to strengthen EFSA's capability to deal with the absence of data, address complex questions and reduce uncertainty.
  - Set-up in 2016 of a cooperation plan with DG Health and Food Safety to develop capabilities supporting risk-based food inspections, such as on the risk ranking of biological and chemical (contaminants) hazards and the development of appropriate surveys and surveillance schemes.

4. **Project description:**

Food safety risk analysis and health technology assessment (HTA) are two different paradigms sharing multiple common features. Decision makers in both fields have the responsibility to promote the health of society deciding on intervention opportunities based on disease burden, intervention feasibility, effectiveness and cost, equity and ethical considerations. The evolution of HTA in the last two decades has resulted in the establishment and widespread use of quantitative tools to support and justify evidence-based decisions. In contrast, decision making in the food safety domain is still a qualitative process rendering ad hoc weights to all aspects considered.

Risk ranking tools are acknowledged scientific approaches in the framework of food safety risk analysis. However, the decision on a particular measure against a specific risk does not rely solely on the magnitude of the risk. It also needs to assess carefully the feasibility, effectiveness and cost of potential interventions, as well as their expected public health benefits. Risk managers shall also consider stakeholder equity, ethical considerations and potential consequences on other risks.

Although cost-benefit analysis is a mandatory element of food safety policy decisions in some countries, it typically does not cover all relevant aspects, and is believed to have frustrating uncertainty in its parameter estimates. Hence, balancing between health burden, costs and expected benefits of intervention measures, considering different stakeholder perspectives, and dealing with the expected impact on food trade, trust of society in the food chain, and effects on economy is essentially a *qualitative* process. Accordingly, the selection of the implemented risk management options is fundamentally a political and social decision at present.

As a response to this challenge multi-criteria decision analysis (MCDA) tools will be developed to cover all important aspects of decision making with standardized weights. The *quantitative* result of a full economic analysis is typically an important component of the multi-criteria decision process, but equity, ethical and socio-cultural aspects will also be covered with relevant weights, in an objective and transparent manner. Developing appropriate MCDA tools to support evidence-based, objective food chain safety decisions, incorporating full economic analyses of the considered measures, is a future opportunity for international and national food safety policies.
Assuming a future widespread use of HTA methodology in the food safety paradigm, a vision of integrated healthcare, food safety and nutritional policy emerges, with the re-evaluation of budgets and resources of these large systems in a rational and socially acceptable way.

5. **MS organisation(s) involved:**

Project leader:

- National Food Chain Safety Office (Mr Ákos Józwiak)

Art 36 organizations in Hungary who would be possibly involved

- National Institute for Food and Nutrition Science

Other (not yet Art 36) organizations in Hungary who would be possibly involved

- Eötvös Loránd University Faculty of Social Sciences (Mr Zoltan Vokó and Mr Zoltan Kaló)

6. **Project planning timeline:**

Suggested start date of the project is 2018.
Developing a multi-criteria decision analysis (MCDA) framework based on HTA knowledge should be finalized within 24 months.

7. **Link to related documents (if any):**

Paper on Next steps to evidence-based food safety risk analysis: opportunities for health technology assessment methodology implementation (http://dx.doi.org/10.7896/j.1524)

First joint projects ideas under the EU RAA

1. **Country:**

   Hungary

2. **Project title:**

Implementing Network science and Mathematical Modelling Tools into European Food Chain Safety Decision Making

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Project links to Delphi priorities:

   - 1. Methods and systems for identifying emerging food risks (e.g. new food-borne diseases)
   - 3. Common data collection/ surveillance scheme (in particular: Big Data/Text Mining/Pattern Recognition/Network Science and Data collection: - Standardization; - open data; - shaping platform)

   Project links to EFSA Strategy Topics:

   - Widen EFSA's evidence base and optimise access to its data
     - Development of data sharing and exchange capacity. Set up and implement a comprehensive and integrated information architecture framework for centralised information access management, enabling data interoperability. Set up data exchange/openness networking groups and establish interoperability with main data providers, based on a multiannual plan to increase EFSA's evidence base in line with internationally accepted quality standards (such as with EUROSTAT, the JRC and EPPO, Member States). Set up innovative approaches to exploit all available sources of information, such as via social media.
   - Prepare for future risk assessment challenges:
     - Processes and a toolbox for emerging risks identi cation and crisis preparedness will be further developed, with particular emphasis in the areas of plant health and vector-borne (wild) animal diseases, and trace-back, trace-forward methodologies and tools.

4. **Project description:**

   Increasing volume and complexity of food production and trade pose an increasing challenge to governmental stakeholders in their efforts to protect consumers from food-born disease outbreaks, food fraud or even bioterrorist attacks. On the other hand, exponential growth of data available on food products and commodity chains provides the potential of better informed decisions. Network science and mathematical modelling – as decision support tools – may have an important role in enhancing the safety of the

consumers and the supply chain itself. In our opinion the combination of algorithms from network science and mathematical modelling could easily be adopted to support crisis prevention, risk-based control, early warning and predictive systems.

To promote the broad adoption of network science and modelling methods in the area of food safety we propose to carry out the following research and development activities:

- Development of a methodological framework for data input, cleaning, enrichment, network analysis, visualization and output, together with a common standardized description and language in this area.
- Using static and dynamic network analysis for various data sources (including animal identification data, international trade data, RASFF data, business connection and transaction data, etc.) in order to enhance the risk ranking, the emerging risk identification, the early warning and prediction systems.
- Development of a methodological framework capable of simulating different epidemiological situations to increase preparedness for real epidemics using network-based spreading models.
- Development of algorithms for embedded network analysis, for identifying and predicting bursts, perfect storms and tipping points as first signs of emerging risks and tools for controlling the network(s).
- Building up a framework for sharing the analysis methodology and algorithms with the network science and food chain safety experts to enhance cross-compatibility of methods, making it possible to expand simulation exercises and risk-based planning processes across borders, and to build up a living community of people of both expertise.

5. MS organisation(s) involved:

Project leader:

- National Food Chain Safety Office (Mr Ákos Józwiak)

Art 36 organizations in Hungary who would be possibly involved

- Szent István University Faculty of Veterinary Science
- Corvinus University of Budapest, Faculty of Food Science

Other (not yet Art 36) organizations in Hungary who would be possibly involved

- Central European University Center for Network Science
- Eötvös Loránd University Faculty of Informatics

EU MS Organizations supporting the joint project proposal:

- Austrian Agency for Health and Food Safety (AGES), Austria (Mr Klemens Fuchs)
- Federal Institute for Risk Assessment (BfR), Germany (Mr Matthias Filter)

EU MS Organizations expresses interest in the proposal:

- Hellenic Food Authority (EFET), Greece (Ms Eirini Tsigarida)

6. Project planning timeline:

Suggested start date
of the project is 2017.
The first phase (including development of a methodological framework and using static and dynamic network analysis for various data sources) should be finalized within 24 months.

7. **Link to related documents (if any):**

Paper on A Network-Science Support System for Food Chain Safety: A Case from Hungarian Cattle Production
(http://ifama.org/resources/Documents/Volume%2019%20Issue%20A/120150138.pdf)

Template for first joint projects ideas under the EU RAA

1. **Country:**

Italy

2. **Project title:**
International Conference: The burden of mycotoxins on animal and human health

3. **Project link to the Delphi priorities / EFSA Strategy topics:** Impact of mycotoxins on animal and human health

4. **Project description:**

Among the main factors and elements that threat the animal and human health, undoubtedly, mycotoxins play a relevant role for their tangible impact on the agri-food chain. Whilst in developing countries a direct association between mycotoxins and the development of a specific disease in humans is more documented, in developed countries this is not yet full ascertained, despite the scientific evidence reveals that these toxic compounds are creating a more and more increasing burden for the whole ecosystem with unavoidable repercussions on the agriculture, first and second transformation industries so as on the health of animals and humans, with a specific focus for sensitive groups such as newborns, infants, children, pregnant women and vegetarians.

For the cited sensitive groups, recent results derived from risk assessment studies pointed out that in some case a worrying exceeding of the health based guidance values is occurring.

This scenario is expected to increase with time due to the global warming of the planet that should lead to the involvement of new geographical areas interested at the contamination and new emerging mycotoxins as a result of the existence of favorable conditions for the growth of moulds.

Keeping in mind this scenario, is quite intuitive the relevance of undertaking preventive activities just from the sowing period, highlighting that without a constructive and collaborative action exerted by food/feed business operator and Competent Authority together, some crucial aspects of the worldwide condition, such as food and feed safety and security, and economical, environmental, agronomical and ethic as well, could turn to irreversible damage for the entire ecosystem.

From the above, the scientific event aims at creating an opportunity of interactive debating for national and international researchers and stakeholders in view of finding solutions and strategies aimed at minimizing the presence of mycotoxins in the agri-food chain as much as possible, by outlining the key role of performing an appropriate risk assessment for orienting the activity of risk management performed by the Competent Authorities and for achieving the main objective of ensuring an high level of both food security and food safety.

The project will be presented in view of the visit of the Executive Director of EFSA, Dr Bernhard Url.

5. **MS organisation(s) involved:**
   Organisation: Istituto Superiore di Sanità (ISS)
   Carlo Brera: carlo.brera@iss.it
   Barbara De Santis: barbara.desantis@iss.it

   Ministero della Salute – DGOCTS

   Focal Point Italiano di EFSA

6. **Project planning timeline:**

   November 2017 (one/two-days)

7. **Link to related documents (if any):**

- http://www.efsa.europa.eu/it/supporting/pub/818e .
  Carlo Brera, Barbara de Santis, Francesca Debegnach, Brunella Miano, Giorgio Moretti, Antonio Lanzone, Gelsomina Del Sordo, Danilo Buonsenso, Antonio Chiaretti, Laura Hardie, Kay White, Anne Lise Brantsæter, Helle Knutsen, Gunnar Sundstøl Eriksen, Morten Sandvik, Liz Wells, Stephanie Allen and Thozhukat Sathyapalan. Experimental study of deoxynivalenol biomarkers in urine. 136 pp.
- EFSA (European Food Safety Authority), 2011. Use of the EFSA Comprehensive European Food Consumption Database in Exposure Assessment. EFSA Journal 2011;9(3):2097, 34 pp.
- http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2802673/pdf/bgp264.pdf
  Christopher P.Wild and Yun Yun Gong. Mycotoxins and human disease: a largely ignored global health issue. Carcinogenesis vol.31 no.1 pp.71–82, 2010.

Template for first joint projects ideas under the EU RAA

- **Country:**
  ITALY

- **Project title:**
  One-Health approach for the assessment of antimicrobial resistance dynamics across compartments through phenotypic, genetic and metagenomic methods.

- **Project link to the Delphi priorities / EFSA Strategy topics**
  [M]Antimicrobial/ antibiotic resistance

- **Project description:**
  The focus of the project will be the production of epidemiological and biological knowledge on the dynamics of antimicrobial resistance (AMR) dissemination across human, veterinary (animal, food) and environmental compartments with a one-health approach. The project will address foodborne pathogens included in the priority list of Dir. CE 99/2003 together with indicator organisms and metagenomics approaches and will integrate epidemiology methods, standard typing technologies alongside new Next Generation Sequencing.
  Objectives:
  1. To collect highly accurate drug consumption data at animal production level associated with management and health information with farm-level detail
  2. To study the origin and transmission dynamics of resistant bacteria (i.e. import versus local selection, zoonotic versus anthropogenic versus environmental) in particular in connection with the information from objective 1
  3. To assess the clonal spread of resistant bacteria versus horizontal gene transfer in the dissemination of resistance across compartments within the one-health scenario.
  4. To study the gene -flows across the proposed compartments, underlying AMR dissemination.

  The objectives will be achieved through:
  - Leveraging the high coverage by IZSLER of isolates of zoonotic bacteria as well as, potentially, indicator bacteria from a regional human population of around 4.5 million, together with the parallel isolates from the animal/food compartment.
  - Implementation of a dedicated database at IZSLER for harmonized collection and analysis of antimicrobial consumption and associated metadata in the veterinary compartment.

- **MS organisation(s) involved:**
  Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna (Giovanni Loris

Alborali
giovanni.alborali@izsler.it; Stefano Pongolini stefano.pongolini@izsler.it)

- **Project planning timeline:**
  Suggested start date and duration:
  The project is predicted to have a three—year duration (2017-2020),

- **Link to related documents (if any):**
  - Directive 2003/99/EC of the European Parliament and of the Council of 17 November 2003 on the monitoring of zoonoses and zoonotic agents, amending Council Decision 90/424/EEC and repealing Council Directive 92/117/EEC
  - Decision 2013/652/EU of 12 November 2013 on the monitoring and reporting of antimicrobial resistance in zoonotic and commensal bacteria
  - EFSA (European Food Safety Authority) and ECDC (European Centre for Disease Prevention and Control), 2016. The European Union summary report on antimicrobial resistance in zoonotic and indicator bacteria from humans, animals and food n 2014. EFSA Journal 2016;14(2):4380, 207pp. doi:10.2903/j.efsa.2016.4380

Template for first joint projects ideas under the EU RAA

1. **Country:**
   ITALY

2. **Project title:**

Harmonization of the integrative molecular surveillance of foodborne pathogens of priority in the light of the technological shift towards Next Generation Sequencing (NGS).

3. **Project link to the Delphi priorities / EFSA Strategy topics**
   - Zoonosis (in general including bio-hazard)
   - Microbial food pathogens

4. **Project description:**
   The focus of the project will be to assist the EU in the transition of the molecular typing approach from PFGE and MLVA to NGS and will concern the foodborne pathogens included in the priority list of Dir. CE 99/2003.
   Objectives:
   - To build and consolidate the capacity in the production of NGS data.
   - To build and share knowledge on the use of NGS data to characterize foodborne microbial hazards.
   - To increase skills and awareness in the use of NGS data in the integrative molecular surveillance of foodborne pathogens.

   The objectives will be achieved through the following activities:
   - Hands-on training programs dedicated to the production, analysis and use of NGS data.
   - Workshops to discuss: i) the experiences accumulated on NGS applied to subtype foodborne pathogens; ii) the gaps and data needs for a full application of NGS to integrative molecular surveillance of foodborne pathogens.
   - Connection with the existing initiative at the EU level (Horizon 2020).
   - Participation in the International Forums for the subject matter.

5. **MS organisation(s) involved:**
   Istituto Superiore di Sanità (S. Morabito; stefano.morabito@iss.it; G. Scavia gaia.scavia@iss.it)
   Istituto Zooprofilattico G. Caporale
   Istituto Zooprofilattico Sperimentale della Lombarida ed Emilia Romagna
   …

6. **Project planning timeline:**

Suggested start date and duration:
The project could have a three—years duration (2018-2020)

7. **Link to related documents (if any):**

- European Centre for Disease Prevention and Control. Expert Opinion on the introduction of next-generation typing methods for food- and waterborne diseases in the EU and EEA. Stockholm: ECDC; 2015.
- EFSA BIOHAZ Panel (EFSA Panel on Biological Hazards), 2013. Scientific Opinion on the evaluation of molecular typing methods for major food-borne microbiological hazards and their use for attribution modelling, outbreak investigation and scanning surveillance: Part 1 (evaluation of methods and applications). EFSA Journal 2013;11(12):3502
- EFSA BIOHAZ Panel (EFSA Panel on Biological Hazards), 2014. Scientific Opinion on the evaluation of molecular typing methods for major food-borne microbiological hazards and their use for attribution modelling, outbreak investigation and scanning surveillance: Part 2 (surveillance and data management activities). EFSA Journal 2014;12(7):3784, 46 pp. doi:10.2903/j.efsa.2014.3784 84 pp. doi:10.2903/j.efsa.2013.3502
- EFSA's 20th Scientific Colloquium on Whole Genome Sequencing of food-borne pathogens for public health protection. EFSA Supporting Publication 2015; 12(2):EN-743, 63 pp. doi:10.2903/sp.efsa.2015.EN-743

Template for first joint projects ideas under the EU RAA

1. **Country:**

   Name of proposing country
   Italy

2. **Project title:**

   Title of the activity (max 500 characters, excl. spaces)
   Assessing an emerging risk for human health: the spread of the toxic silver-cheeked toadfish Lagocephalus sceleratus across European seas.

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Add link to the Delphi priority number and/or EFSA Strategy topics listed in the Annex B of the EU RAA paper
   Emerging contaminants: Model for predicting emerging risks due to climate change (e.g. alien species, aflatoxins)

4. **Project description:**

   Brief description of the project, its main objectives and nature of activities (max 2000 characters)
   The project is aimed to both evaluate and manage the risks associated to the spread of the toxic silver-cheeked toadfish *Lagocephalus sceleratus*, one of the "worst" invaders of the Mediterranean Sea. Due to its toxicity, many Mediterranean countries have locally responded to this hazard by informing local communities about the risks associated to the consumption of this species [1]. Notwithstanding these efforts, a proper risk evaluation is still missing. Moreover, individual actions often lack of the appropriate coordination challenging the understanding of a public hazard that is rapidly expanding across European seas. This also limits the possibility of appropriate cooperation among member states, as requested by EU Regulation on invasive alien species [2]

   Here, we will provide a risk assessment, based on A) the evaluation of socio-ecological aspects and public awareness on this issue and on B) tracking the occurrence and relative abundance of this species in European and Mediterranean waters. To this aim, both historical and current information will be gathered. Existing monitoring systems will be implemented to appropriately track the occurrence of this species in European waters. This also entails the engagement of local communities in participatory actions and awareness evaluation, according to successful experiences recently tested at both national and transnational scales [3]. Project outcomes will provide specific information on the risk

to which are subjected different categories of stakeholders among consumers and sea users. These actions are expected to have long-lasting outcomes, triggering interest in local communities and encouraging spontaneous exchange of information among researchers, managers and the general public. In order to inform scientific bodies, governments and local communities about the geographical expansion of the species, geo-referenced occurrence data will be compiled, organized and uploaded to European databases. This information source will be combined with historical records and made it easily accessible to both scientific audiences and the general public. Collected specimens will be chemically analysed to assess the species toxicity in the different organs. In order to reduce the risks of inadvertent consumption of the species, a coordinated awareness campaign will be developed to inform citizens among all European countries, capitalizing the experience acquired so far by the single member states.

5. **MS organisation(s) involved:**

ISPRA Istituto Superiore per la Protezione e Ricerca Ambientale
Contact details
Ernesto Azzurro ernesto.azzurro@isprambiente.it
Member state Italy

6. **Project planning timeline:**

Suggested start date and duration
April 2017, three years

7. **Link to related documents (if any):**

1. Azzurro E, Castriota L, Falautano M, Bariche M, Broglio E, Andaloro F. (2016) New records of the silver-cheeked toadfish Lagocephalus sceleratus (Gmelin, 1789) in the Tyrrhenian and Ionian Seas: early detection and participatory monitoring in practice.
http://www.reabic.net/journals/bir/2016/Accepted/BIR_2016_Azzurro_etal_correctedproof.pdf

2. European Commission. Regulation of the European Parliament and of the Council on the prevention and management of the introduction and spread of invasive alien species. 2013/0307 (COD).
http://register.consilium.europa.eu/doc/srv?l=EN&f=PE%2070%202014%20INIT

3. Azzurro E, Moschella P, Maynou F (2011) Tracking Signals of Change in Mediterranean Fish Diversity Based on Local Ecological Knowledge. PLoS ONE 6(9): e24885. doi:10.1371/journal.pone.0024885
http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0024885

Template for first joint projects ideas under the EU RAA

Country:

Latvia

Project title:

"Novel" and "emerging" brominated flame retardants (NBFRs and EBFRs): occurrence in the environment of the Baltic region and possible impacts on the food safety

Project link to the Delphi priorities / EFSA Strategy topics:

Topic 11 Emerging contaminants

Project description:

During the past decades, a number BFRs have been commercially produced and their use has increased dramatically since 1970s [1]. Due to the persistency and bioaccumulation properties, one of the largest group of BFRs, polybrominated diphenyl ethers (PBDEs), has been banned [2-4] and several EBFRs and NBFRs have been suggested as replacements for the banned formulations [5]. There is a lack of comprehensive information on the current use and production volume, as well as experimental data on the physical/chemical characteristics or stability/reactivity/persistence for most of the EBFRs and NBFRs. According to the scientific opinion of European Food Safety Authority (EFSA), some of these compounds present potential human health concerns due to genotoxic and carcinogenic properties [6]. The similarity of EBFRs and NBFRs to well known persistent organic pollutants (POPs) may result in migration through food chains, with possible long-term health and environmental impacts. Taking into account the growing attention to the BFR problems in the environment, EU recommendation on the monitoring of BFRs was recently proposed in order to promote the data collection on these compounds [7]. Nevertheless, the up to date occurrence data for these contaminants is very scarce.

The Baltic Sea region is known for the high degree of contamination with POPs among which special emphasis was made to chlorinated dioxins, furans and biphenyls as well as BFR representatives PBDEs. As regards to the occurrence of EBFRs and NBFRs in the Baltic Sea region, there are significant lack of data for these compounds, although, taking into account the properties of majority of EBFRs and NBFRs similar to POPs, the presence of these compounds could be expected. The proposed project aimed to the analysis of number of EBFRs and NBFRs in the environmental samples from the Baltic region, providing the first data on the occurrence of these contaminants in the Baltic States, thus enhancing the awareness about BFRs and giving the opportunity to perform preliminary risk assessment and to inform regulatory initiatives. Considering that there are almost no occurrence data for the majority of EBFRs and NBFRs, the contribution of the project will be of a global significance because of the comprehensiveness of the provided results.

MS organisation(s) involved:

- Member State: Latvia
- Competent organization: Institute of Food safety, Animal health and Environment “BIOR”
- Contact person: Vadims Bartkevičs
- Email: Vadims Bartkevičs
- responsible national body: Institute of Food safety, Animal health and Environment “BIOR”

Project planning timeline:
2017

Link to related documents (if any):

1) M. Alaee, P. Arias, A. Sjodin, A. Bergman, An overview of commercially usedbrominated flame retardants, their applications, their use patterns in different countries/regions and possible modes of release, Environ. Int. 29 (2003) 683-689.
2) Directive 2003/11/EC of the European Parliament and the Council of 6 February 2003, amending for the 24th time the Council directive 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations (pentabromodiphenyl ether and octabromodiphenyl ether), Off. J. L 042 (15/02/2003).
3) California State Assembly, Assembly Bill No. 302, California State Assembly, Sacramento, C.A., 2003.
4) European Court of Justice, Cases C-14/06 and C-295/06, Judgement of the Court, 1 April 2008, Directive 2002/95/EC and Commission Decision 2005/717/EC, 2008.
5) A. Bergman, A. Ryden, R.J. Law, J. de Boer, A. Covaci, M. Alaee, L. Birnbaum, M. Petreas, M. Rose, S. Sakai, N. Van den Eede, I. van der Veen, A novel abbreviation standard for organobromine, organochlorine and organophosphorus flame retardants and some characteristics of the chemicals, Environ. Int. 49 (2012) 57-82.
6) EFSA, Scientific opinion on emerging and novel Brominated Flame Retardants (BFRs) in food, EFSA J. 10 (10) (2012) 2908.
7) Commission Recommendation 2014/118/EU on the monitoring of traces of brominated flame retardants in food, Off. J. Eur. Commun. L65 (2014) 39-40.

Template for first joint projects ideas under the EU RAA

1. Country:

Latvia, Lithuania, and Estonia

2. Project title:

Collaborated membership of Baltic state countries on the method development and application for chemical analysis and risk assessment of emerging mycotoxins: studies of public health and economic benefits of national agricultural products and market demanded foodstuff.

3. Project link to the Delphi priorities / EFSA Strategy topics:

The "EFSA Strategy 2020" document*:*

- operational topic 2: Develop and implement harmonised methodologies and guidance documents for risk assessment across the EU and internationally.

http://www.efsa.europa.eu/sites/default/files/corporate_publications/files/strategy2020.pdf

The Delphi study priorities:

- Topic 2 Development of standard risk-benefit assessment methods;
- Topic 3 Common data collection /surveillance scheme;
- Topic 4 Multiple contaminant impacts on the risk profile of foods
- Topic 7 Aggregated exposure (as per cocktail effects, but including environmental as well as food exposures)
- Topic 8 Harmonisation of methods for risk assessment of chemical contaminants
- Topic 9 Cumulative exposure assessment
- Topic 10 Infant and baby food
- Topic 11 Emerging contaminants
- Topic 19 Improving information on the occurrence and spread of harmful organisms
- Topic 27 Food supplements risk/benefits (in general)

4. Project description:

Over the last decade, global concerns have raised towards increasing evidences of "emerging" mycotoxins found in harvested agricultural products and processed food. The environmental dynamism, increased industrial rates / amounts of food production, etc. factors determine need to control quality and safety and assess potential risk issues of emerging contaminants. In earlier studies, the lack of sensitive analytical methods did not allow to cover all the classes of emerging mycotoxins and their real concentration levels. These metabolites of moulds are still not legislatively regulated in food. The vitro and in vivo tests have shown toxic effects on animals, thus

their studies are of high importance due to potential public health issues due to their spreading prevalence in foodstuff and less investigated health issues [1].
It is highly important to strengthen the multidisciplinary scientific cooperation of the Baltic state countries regarded to the assessment of mycotoxin contamination. Recently, the Workshop for the Baltics Countries on Crisis Preparedness was co-facilitated by the EFSA and BIOR a focused on the knowledge transfer on safety assessment strategies on the risk assessment and prevention aspects in future [1].
The proposed project focuses on the combined development of reliable analytical methods and risk assessment tools for the study of "emerging" mycotoxins in agricultural, dairy and other food products, to gain positive effect on the public health issues and the safety aspects of food products in the Baltic state countries and within the EFSA strategy of 2020 [3]. The collaboration of Latvian, Lithuanian and Estonian experts will be organised on the studies of environmental, technological, storage factors on food contamination and the potential risk assessment gaining the development of data-base of the quality and safety of food production and storage [3]. The organisation of discussion workshops will strengthen experience of members and also the collaboration of the focal institutes to EFSA community regards the global concerns of "emerging" mycotoxin risks to public society as well as based on the global database of EFSA [4].

5. MS organisation(s) involved:

- Institute of Food Safety, Animal Health and Safety "BIOR", Riga, Latvia (Focal Point of EFSA in Latvia)

Contact persons: Vadims Bartkevičs,
E-mails: Vadims.Bartkevics@bior.lv

6. Project planning timeline:

July 2017 – duration 2 years.

7. Link to related documents (if any):

1. Gruber-Dorninger, C., Novak, B., Nagl, V., & Berthiller, F. (2016). Emerging mycotoxins: Beyond traditionally determined food contaminants. Journal of Agricultural and Food Chemistry. Doi: 10.1021/acs.jafc.6b03413.
2. A.Vincent. (2016) Report of Baltic Countries 2016 Workshop on Crisis Preparedness. Instinct if Partners Ltd. EFSA Supporting Publications 2016; 13 (6), 25 pp., Available at: http://onlinelibrary.wiley.com/doi/10.2903/sp.efsa.2016.EN-1045/abstract.
3. A. Gallo, G. Giuberti, J. C. Frisvad, T. Bertuzzi, K. F. Nielsen (2015). Review on mycotoxin issues in ruminants: occurrence in forages, effects of mycotoxin ingestion on health status and animal performance and practical strategies to counteract their negative effects. Toxins, 7(8), 3057-3111.
4. EFSA (European Food Safety Authority), 2011. Use of the EFSA Comprehensive European Food Consumption Database in Exposure Assessment. EFSA Journal 2011;9(3):2097, 34 pp.

Template for first joint projects ideas under the EU RAA

1. Country:

The Netherlands

1. **Project title:**
EuroMix follow-up

The joint creation of a strategic agenda that outlines the future work that is needed on national, EU and international level to implement a coherent and widely accepted approach to cumulative & aggregate risk assessment (also 'cocktail effects'), based on ongoing research projects and implementation initiatives.

The project will encompass training activities and strategic discussion workshops on EU level and with WHO, and will do research on the improvement of risk communication to a wide and diverse audience.

3. Project link to the Delphi priorities / EFSA Strategy topics

Delphi priorities:

General priorities: 7. Aggregated exposure (via cocktail effects, but including environmental/ food exposure)

Chemical priorities: 9. Cumulative exposure assessment (e.g. for pesticide residues/ PAHs)

In addition, Environmental priorities: 24. Cocktail effects (health risk assessment of chemical mixtures, e.g. food additives) might be included, if the Member State consultation indicates that this is feasible[8]

4. Project description:

This proposal links ongoing activities on cumulative pesticide risk assessment (NUMBER: GP/EFSA/PRAS/2014/02EFSA) and EuroMix research (GA no 633172) to future risk assessment on mixture or cocktail effects. The proposal includes follow-up needed to widely implement tools, models and techniques at the Member State level. It aims to identify means to translate the innovation from current research projects to practical application in tomorrow's risk assessment.

[8] The ongoing public consultation on the ToR for the Scientific Committee Working Group on "Harmonisation of risk assessment methodologies for human health and ecological risk assessment of combined exposure to multiple chemicals" was noted. Activities as described in the current proposal will be tuned to these of the SC WG. http://www.efsa.europa.eu/en/consultations/call/161024a

The project aims for
a wider Member States involvement on the results generated in the EFSA and EuroMix projects, and to identify future research goals. For this, the following actions are proposed:

- To align with ongoing activities such as the EuroMix project and a number of EFSA procurements projects connected to cumulative risk assessment and the cocktail effect;
- To produce a useful concept combining integrated test strategies (EuroMix) and kinetics (EFSA grants). The scope of this activity depends on the number of organisations/Member States that apply for the topic 'aggregated exposure'.
- To provide hands on training to Member States, Focal Point members and/or EFSA experts on a number of tools and concepts needed for future cumulative and aggregated risk assessment, the cocktail effect. The tools which we have in mind in the EuroMix project, are:

1. Adverse Outcome Pathway wise testing in order to focus on biologically relevant endpoints for cumulative assessment groups;
2. The use of computational toxicology (QSAR) to identify the first profiling of a chemical (in line with already ongoing EFSA training, but more specialized to cumulative assessment groups);
3. To train on exposure assessment tools;
4. To explore a contribution from the social sciences in order to facilitate communication on cumulative risk assessment to a wide and diverse audience.
5. To address a number of new chemical classes not fully addressed in EuroMix or EFSA projects, to refine cumulative and aggregated risk assessment(responsible persons WR, RIVM, BfR, University of Milano (Italy)

- Ultimately, a strategic agenda will be drafted outlining future work that is needed on national, EU and international level to implement a coherent and widely accepted approach to cumulative risk assessment This strategic agenda should be in line with new H2020 funding instruments.

8. MS organisation(s) involved:

Jacob van Klaveren
National Institute for Public Health and the Environment (RIVM)
P.O. Box 1 3720 BA, Bilthoven
The Netherlands
tel: + 31 - (0)30 - 274 7045
mobile + 31 - (0)6 - 11 53 71 69
E-mail: jacob.van.klaveren@rivm.nl

Ad Peijnenburg
RIKILT Wageningen Research
P.O. Box 230, 6700 AE Wageningen
The Netherlands
tel: + 31 - (0)317 - 480284
E-mail: ad.peijnenburg@wur.nl

Contact details (name and email) of the responsible national body(ies)

9. Project planning timeline:

- Providing that the proposals of Member States will be exchanged among the members of the EFSA AF of EFSA Focal Points, we can fine tune our proposal with others (until December 2016);
- To receive response on the proposals and the next step via EFSA AF, EFSA focal points or otherwise;
- To draft a proposal in a thematic grant, provided that EFSA or EFSA AF consider this topic as a priority for thematic grants (2017);
- To provide training and to organize strategic discussions in2017 -19;
- To draft a strategic agenda in 2019 also in line with the EuroMix activities (input from BfR, UK, Wageningen (WR) other EuroMix partners, and other interested Member States).

Suggested start date mid 2017. Duration 2-3 years depending on the scope to be agreed with EFSA and the Member States

10. Link to related documents (if any):

http://www.euromixproject.eu/
http://www.rivm.nl/en/Topics/F/Food_safety/EFSA_RIVM_Symposium
http://www.efsa.europa.eu/en/press/news/160127
http://ec.europa.

Template for first joint projects ideas under the EU RAA

1. **Country:**

   Netherlands

2. **Project title:**

   Detection and identification of emerging contaminants using activity-based strategies

3. **Project link to the Delphi priorities / EFSA Strategy topics**
   This project addresses the Chemical priority 11: “Emerging contaminants”

4. **Project description:**
   Novel risks are in most cases detected by examination of adverse effects that occur in animals or humans. Following identification of the causal agent, analytical methods can be developed for testing feed or food. This implies that effect-based methods are important tools for the detection of novel risks. This was also concluded by the EFSA CONTAM Panel in their review on meat inspection. It is therefore important to develop, validate and implement bioassays in routine monitoring and to develop strategies for the identification of compounds responsible for unexplained positive test results.
   This should be done in parallel with analytical chemical approaches that are able to detect and identify variants of known contaminants based on their chemical properties and classification, such as certain classes of plant toxins (PAs, TAs), and endocrine disrupting compounds (certain mycotoxin conjugates, BPA analogues).
   This proposal links ongoing research activities on the development of novel bioassays (e.g. cell-based assays for (unknown) marine toxins, which can replace the mouse bioassay) and analytical discovery research based on conserved structural features (e.g. halogenated organic contaminants, PAs) to similar activities in other European laboratories. The aim is to jointly work on a portfolio of effect based assays and identification strategies that help discover and identify emerging contaminants based on their adverse effect or structural similarity.
   In order to ensure that these bioassays and analytical strategies become integrated into European food safety programmes, it is essential to create a network of laboratories not only working on the development of these assays but also willing to implement them in routine monitoring.

5. **MS organisation(s) involved:**

   Ron Hoogenboom
   RIKILT Wageningen Research
   P.O. Box 230, 6700 AE Wageningen
   The Netherlands
   tel: + 31 - (0)317 - 481745
   E-mail: ron.hoogenboom@wur.nl

Other European laboratories with statutory and research tasks in food safety

6. **Project planning timeline:**

- Providing that the proposals of Member States will be exchanged among the members of the EFSA AF of EFSA Focal Points, we can fine tune our proposal with others (until February 2017);
- After we receive response on the proposals and the next steps from EFSA we can draft a proposal in a thematic grant, provided that EFSA or EFSA AF consider this topic as a priority for thematic grants (2017);
- Suggested start date mid 2017. Progress on building the portfolio of assays and strategies will depend on the amount and type of funding available to the various partners within the consortium.
- It is our goal to build a network of similar organisations in order to be able to jointly decide on priorities and exchange knowledge, results and assays that will last beyond the funding period of the associated projects.

7. **Link to related documents (if any):**

Scientific Opinions on various classes of contaminants:
Pyrrolizidine alkaloids in food and feed: https://www.efsa.europa.eu/en/efsajournal/pub/2406
Tropaan alkaloids: https://www.efsa.europa.eu/en/efsajournal/pub/3386
Marine biotoxins in shellfish: http://onlinelibrary.wiley.com/doi/10.2903/j.efsa.2008.723/full
Azaspiracid group: http://onlinelibrary.wiley.com/doi/10.2903/j.efsa.2008.723/full
Etc.

http://www.wur.nl/en/Expertise-Services/Research-Institutes/rikilt/Expertise-areas/Measuring-and-detecting-substances/Contaminants.htm

RIKILT NL project idea under the EU RAA

1. **Country:**
   Netherlands (RIKILT Wageningen UR)

2. **Project title:**
   Methods and systems for identifying emerging food risks (e.g. new food-borne diseases)

3. **Project link to the Delphi priorities / EFSA Strategy topics**
   This project aims at generic topic 1: "Methods and systems for identifying emerging food risks (e.g. new food-borne diseases)" in the EFSA risk assessment agenda.
   A critical success factor is the ability and willingness for member states to share relevant data within Europe, which aligns with EFSA's objective to widen EFSA's evidence base and optimise access to its data. Furthermore, gaining a better understanding and creating methods and systems for identifying emerging food risks will help prepare for future risk assessment challenges, another strategic objective of EFSA.

4. **Project description:**
   It is nowadays well understood that food is produced in a complex environment that is directly and indirectly influenced by many drivers of change such as climate, human behaviour, trade etc. These factors should be taken into account if one aims to detect existing and emerging risks and to anticipate to them in time. A system or holistic approach is needed on the whole food chain (from farm to fork) including the identification of drivers of change (on each segment), indicators and data sources. This information should be integrated in order to develop prediction models which utilise machine learning techniques (among others Bayesians networks), ontologies, and expert knowledge. Such models will allow identification of abnormalities that may cause a future risks. In addition scenario's playing will help the risk managers and/ or risk assessor to predict the effect of possible measures. The above mentioned approach requests knowledge on the food supply chain of interest, text mining and web crawling technologies, in silico artificial knowledge, mathematics and modelling. At RIKILT projects in this area are ongoing, making us a suitable lead partner in an EU RAA project. For example the project "Food Chain Analysis of selected aquaculture species products: Identification and monitoring of vulnerabilities and drivers of change for the identification of emerging risks" (OC/EFSA/SCER/2015/02). From the existing projects, first models have been developed for food fraud and hazards and collaborations with a number of other European research organisations are active.

5. **MS organisation(s) involved:**
   RIKILT Wageningen UR, contact person Hans.marvin@wur.nl

6. **Project planning timeline:**
   Currently an EFSA call GP/EFSA/AFSCO/2016/01 titled Methodology development in risk assessment is open. RIKILT is currently in the lead for an application to lot 1: Methods and systems for the identification of emerging food risks. Preferably EU RAA project should align with this EFSA project on emerging risks.

Link to related documents (if any):

Template for first joint projects ideas under the EU RAA

1. **Country:**

Norway

2. **Project title:**

Transmission properties of CWD in Norway/Europe

3. **Project link to the Delphi priorities / EFSA Strategy topics**

The project has clear link to Delphi priorities 12, 13 and 18.

4. **Project description:**

Background: The prion disease Chronic wasting disease (CWD) was diagnosed for the first time in Europe spring 2016, when a wild reindeer in the Nordfjella mountain area in Norway tested positive for CWD. Soon thereafter two moose in the Selbu area, approximately 300km away from the reindeer case were found positive. Recently, a new case in wild reindeer was identified in Nordfjella. Several questions remain unanswered: such as the source and timing of introduction of CWD to Norway. We are currently also lacking information on transmission properties of the CWD agents involved, but preliminary data suggest that two different strains could be present – one affecting the reindeer and another causing disease in the moose. The purpose of the project is to characterize transmission properties (species, including livestock, sex etc) of these agents, as well as to map European cervid populations in terms of genetic susceptibility. Moreover, to provide basic epidemiological modelling of the disease dissemination among cervid populations – for instance through natural migratory routes and/or organized transport between pastures, for instance in semi-domesticated herds of reindeer in Fennoscandia.

This outline results from a collaborative effort between the Norwegian University of Life Sciences (NMBU), the Norwegian Veterinary Institute (NVI), the Norwegian Institute for Nature Research (NINA) and the University of Tromsø (UiT).

1. Further typing of PrP^{CWD} isolates – PK resistance, IHC distribution and pattern, epitope mapping.
2. Transmission properties of PrP^{CWD} – mouse models and bank vole and in sheep susceptible to classical scrapie (VRQ/VRQ homozygotes)
3. Expand PRNP genotyping in European cervid populations
4. Develop analytical tools/models (connectivity analysis) to characterize the dissemination of CWD in various populations – utilization of GPS data on natural

migration – as well as data on transport of animals (semi-domesticated reindeer) between seasonal pastures throughout Fennoscandia.

5. Explore (dependent upon surveillance data) harvesting and depopulation strategies as control/eradication measures. Explore the usefulness of wildlife fencing to limit the spread of CWD.

5. MS organisation(s) involved:

1. The Norwegian University of Life Sciences (NMBU), Michael Tranulis michael.tranulis@nmbu.no,
2. The Norwegian Veterinary Institute (NVI),
3. The Norwegian Institute for Nature Research (NINA) and
4. The University of Tromsø (UiT).

6. Project planning timeline:

Start date ASAP.
Duration to be agreed on.

7. Link to related documents (if any):

Risk assessment of CWD in Norway (phase 1) published by the Norwegian Committee for the Food Safety http://www.vkm.no/dav/c90d2f3b4c.pdf

Template for first joint projects ideas under the EU RAA

1. **Country:**

   Norway

2. **Project title:**

   Fate and behaviour of pesticides in the environment in the northern zone

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Delphi 22: The impact of chemicals on the ecosystem (release of chemicals into the environment)

4. **Project description:**

   Soil and climate conditions will affect the occurrence of pesticides and metabolites, exposure concentrations and potential effects of complex mixtures in the environment, and there is a need for improved data and methods for risk assessment. Commission regulation (EU) No 283/2013 lays out that the soils used for degradation, adsorption and desorption or mobility studies of pesticides shall be representative of the range of agricultural soils typical of the various regions of the Union where use exists or is anticipated. Furthermore, field studies shall be carried out in conditions as close to normal agricultural practice as possible on a range of soils and climatic conditions representative of the areas of use. However, most often, EFSA performs risk assessment of pesticide fate and behaviour based on data from central and southern Union zones, due to lack of data from the northern zone. Research show that Nordic soil and climate conditions (i.e. low summer soil temperatures, below zero winter soil temperatures) are challenging due to slow degradation of pesticides and risk of mobilization of sorbed pesticides in winter/spring caused by freezing/thawing of soil (Almvik et al. 2014; Laitinen et al. 2006, 2009; Stenrød et al. 2008; Siimes et al. 2006). A joint Nordic-Baltic project on the fate and behaviour of pesticides and their metabolites in the northern zone environment (soil, water, vegetables) will help identify pesticides of concern in the northern zone, assess mixture toxicity to humans and propose risk assessment adaptations needed for our special zone (Stenrød et al. 2016).

5. **MS organisation(s) involved:**

   NIBIO Biotechnology and plant health, Department for pesticides and natural products chemistry

Contacts:
- Marit Almvik (research scientist), marit.almvik@nibio.no
- Marianne Stenrød (head of department), marianne.stenrod@nibio.no

6. **Project planning timeline:**

Suggested start date and duration: January 2017-January 2021

7. **Link to related documents (if any):**

VKM Report 2015: 34 Degradation and mobility of pesticides in Norwegian soils

References:

Almvik et al. 2014. Bioforsk TEMA 9 (4). ISBN: 978-82-17-01216-0.
Laitinen et al. 2006. Pest Manag Sci 62:473–491
Laitinen et al. 2009. Plant Soil 323:267–283.
Siimes et al. 2006. Agric Water Manag 84:53–64.
Stenrød et al. 2008. Cold Regions Science and Technology 53:4–15.
Stenrød et al. 2016. Environmental science and pollution research international 23:15779-15788.

Template for first joint projects ideas under the EU RAA

1. **Country:**

   Norway

2. **Project title:**

   Occurrence of the microplastics in marine environment and impact on the food safety and animal health and welfare

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Annex B 11, 19

4. **Project description:**

   Clean sea is an important prerequisite for the sea as a healthy food basket and we need to understand what impacts human activities on sea and on land have on the marine food source. Microplastics in the sea may contain and accumulate pollutants and threaten food safety and food security. There is evidence that many marine animals ingest micro plastics and pollutants can be released from micro plastic in the stomach of animals.

   European Food Safety Authority (EFSA) published in June 2016 a review of literature and data on microplastics and nanoplastic in food, especially seafood. They conclude that there is not enough knowledge about uptake, revenue and possible health effects for a complete risk assessment of food intake with micro plastics. They also conclude that we need more occurrence data.

   Food safety aspect for humans is one issue if components come into the food, but there is also aspects related to fish health and growth of the fish in the sea.

   There is a need for more knowledge about the effects on the marine organisms that we eat and the effects on people who eat them. Therefore we need to gain more knowledge on occurrence of microplastic in marine environment and possible impacts on food safety for humans and health and welfare of animals.

5. **MS organisation(s) involved:**

6. **Project planning timeline:**

   TBA

7. **Link to related documents (if any):**

EU RAA Catalogue of Project Ideas

Template for first joint projects ideas under the EU RAA

1. **Country:**

Poland

2. **Project title:**

Methods of data mining for food monitoring system

3. **Project link to the Delphi priorities / EFSA Strategy topics**

1. Methods and systems for identifying emerging food risks
3. Common data collection/ surveillance scheme (in particular: Big Data/Text Mining/Pattern Recognition/Network Science and Data collection: - Standardization; - open data; - shaping platform) Project links to EFSA Strategy Topics:

EFSA Strategy topics - Widen EFSA's evidence base and optimise access to its data

4. **Project description:**

The aim of the project is the development, implementation and preparation for implementation of the Computer System Support for Food Safety Surveillance - a system of information support to supervise food safety, providing comprehensive support organizations (state agencies) responsible in the country for ensuring food safety.
Support will be implemented through the following functionality implemented in the system
1) collect, combine and analyze different types of information (eg. Analytical reports, epidemiological information, Internet, mass media, follow-up protocols, consumer complaints) related to the issues of food safety.

The principal component analysis of the proposed system will be data mining module, designed to be dedicated to the situation typical for the activities of food safety services, where data availability is limited, and these data are often incomplete or uncertain. Using the latest achievements in the field of data mining is possible to quickly create accurate forecasts and proposals based on the relatively incomplete data. Official food control will have an effective analytical tool prompting both possible sources of emerging events and indicating ways of mitigating emerging risks.
An important element of the auxiliary system will be bi-directional data exchange interfaces, allowing both the smooth introduction of the system to the latest information

and reports on issues
of food safety, and to transfer out the results of analyzes related to the detected threats and ways of their elimination.

The project will provide a system that will have a significant impact on how the risk management of food will take place. Currently much information is in the possession of a number of institutions that describe facts which may have a potential impact on food safety (Chief Sanitary Inspectorate, Chief Veterinary Inspectorate, etc.). Unfortunately, most of collected information is available and used only locally, because due to the sensitivity of data on food safety (refer to entities that may take legal action if they are associated with unsafe food) there are a number of regulatory restrictions and justified the refusal to provide for broader analysis. As a result, there is no complete and accessible picture of the risks associated with food safety. The result of the project will be a system that allows:
1) integration of relevant information relating to food safety;
2) efficient and secure sharing of information related to food safety

5. MS organisation(s) involved:

- National Institute of Public Heath – National Institute of Hygiene (J.Postupolski; jpostupolski@pzh.gov.pl)

No 36.Article Organisation

- Warsaw Technical University
- Military Technical University

6. Project planning timeline:

2017-19

7. Link to related documents (if any):

EU RAA Catalogue of Project Ideas

Template for first joint projects ideas under the EU RAA

1. Country:

Poland

2. Project title:

Characteristics of the HAV virus strains found in Poland

3. Project link to the Delphi priorities / EFSA Strategy topics

1. Methods and systems for identifying emerging food risks (e.g. new food-borne diseases)
12. Systems for monitoring and characterising microbes isolated from food, environment and human illness cases

4. Project description:

The aim of the research would be to obtain information and to assess the prevalence in the country of infections in humans caused by noroviruses (NOV types of GI / GII) and hepatitis A (HAV). Data have been obtained on the basis of environmental testing for the presence of these viruses and from samples from official food control. Today, such tests are not conducted in Poland, while there are difficulties in identifying outbreaks of infections caused by both noroviruses and HAV. Designation would be made in samples of waste water treatment received at monthly intervals of the selected wastewater treatment plants from all over the country.

- The development of the study protocol and logistical aspects of the collection of research material
- Assembly of a representative sample of material from patients with hepatitis in Poland
- Conduct molecular characterization of strains HAV
- Analysis of the results including the mapping of strains present in the country
- Developing a report with research strategy for the coming years

5. MS organisation(s) involved:

- National Institute of Public Heath – National Institute of Hygiene (J.Postupolski; jpostupolski@pzh.gov.pl)

6. Project planning timeline:

2017-20

7. Link to related documents (if any):

EU RAA Catalogue of Project Ideas

Template for first joint projects ideas under the EU RAA

1. **Country: Poland**

2. **Project title:**

Evaluation of effects of emerging marine biotoxins and their monitoring to provide safer seafood to the consumer.

3. **Project link to the Delphi priorities / EFSA Strategy topics**

Reference N°11 corresponding to "Emerging contaminants".

4. **Project description:**

Shellfish poisoning is caused by a group of toxins elaborated by planktonic algae (dinoflagellates), in most cases upon which the shellfish feed. When the mollusc digests the toxic organism, the toxin is retained largely in the digestive gland, but if the toxin accumulation is sever enough other tissues are contaminated as well. Marine biotoxins are a group of natural toxins which may accumulate in seafood. Meat of mussels may contain except a number of chemical compounds, also marine biotoxins. After consuming contaminated mussels serious health problems can appears for the consumers. Consumers data shows an increasing of interest in "frutti di mare", including bivalve molluscs, which may be a potential source of foodborne diseases and poisonings. Heat resistance of the toxins cause that even well-cooked bivalves might still constitute a risk for human health. Over the last decade, global concerns have raised towards increasing evidences of "emerging" marine biotoxins found in harvested sea products. During the last 20 years, an increase in intoxications caused by marine toxins has been observed. For marine biotoxins, there is a lack of information about presence of biotoxins in molluscs available on market and whereby further research studies are required to cover the gaps in knowledge relating to their prevalence and validated alternative methods for their detection in shellfish.The project will focus on the rating of MBA-replacement methods such as immunological diagnostics (ELISA) for a rapid determination of targeted marine toxins and for the confirmation of positive samples by HPLC. The next part of the project will be dedicated to choose alternative method for detection of marine biotoxins in range of seafood samples collected from our marked, origin from different countries in Europe to determine the occurrence of these toxins. The objective of the project was to evaluate marine biotoxins contamination of live bivalves available for human consumption in Poland. The challenge is to generate reliable knowledge for consumers risk from marine biotoxins. and solutions to determine toxicity data for marine toxins.

5. **MS organisation(s) involved:**

Member State: Poland
- Competent organization: National Veterinary Research Institute, Pulawy
- Contact person : Jacek Osek
- E-mail: josek@piwet.pulawy.pl

6. **Project planning timeline:**

January 2018 – duration 2 years

7. **Link to related documents (if any):**

-https://www.degruyter.com/downloadpdf/j/bvip.2013.57.issue-4/bvip-2013-0091/bvip-2013-0091.xml
-DOI:10.1515/jvetres-2016-0067
-http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02004R0853-20160401&qid=1481539920970&from=EN
-

INFO DLA PANA DR. (liczymy na EFSA)

It is planned to apply for funding from the national project.

Template for first joint projects ideas under the EU RAA

1. **Country:**

Portugal

2. **Project title:**

2017 Workshop on Plant Health Crisis preparedness

3. **Project link to the Delphi priorities / EFSA Strategy topics**

This project enhances the collaboration of EFSA with its institutional stakeholders in the area of crisis preparedness and response. It is in line with EFSA 2020 strategic objective 4. Furthermore the organization of regional crisis trainings is part of a strategy for intensifying collaboration and sharing of data and knowledge between MS, EFSA and other relevant stakeholders which is in compliance with strategic objective 3.

This Workshop aims to discuss Plant Health Crisis Preparedness, by sharing experiences and best practices; and by promoting the approach on concepts, principles and procedures.

4. **Project description:**

The workshop will be a simulation exercise on an emerging plant pest threatening important Mediterranean crop(s) in Southern Europe. It shall last two days and involve four to five Member States of Southern Europe, EPPO, the European Commission and other stakeholders on the area of plant health. Its objectives will be to (i) discuss methodology for data collection and reporting, (ii) networking of key players who would need to work together during a real situation and (iii) explore risk communication activities. The outcomes of the workshop will be summarised into a technical report.

5. **MS organisation(s) involved:**

Direção Geral de Alimentação e Veterinária will collaborate with EFSA in the organisation of the event and make the logistical arrangements.

[Contact details (name and email) of the responsible national body(ies)]

6. **Project planning timeline:**

The preparation of the exercise shall start in October 2016 in collaboration with EFSA who has already experience in organising such events (see related documents below). It shall take place in Lisbon, Portugal in February 2017.

7. **Main Keys**: Capacity Building and Developing Technical Skills; Strengthening Cooperation with counterparts.

8. **Link to related documents (if any):**

- Baltic Countries 2016 Workshop on Crisis Preparedness: http://www.efsa.europa.eu/en/supporting/pub/1045e
- EFSA's food and feed crisis preparedness training: 2015 Crisis Training Exercise: http://www.efsa.europa.eu/en/supporting/pub/987e

Template for first joint projects ideas under the EU RAA

1. Country:

Portugal (1)

8. Project title:

FTRACE – Tracing food additives through a smartphone

9. Project link to the Delphi priorities / EFSA Strategy topics:

1- Methods and systems for identifying emerging food risks
8- Harmonization of method for risk assessment of chemical contaminants
24- Cocktail effects (health risk assessment of chemical mixtures (food additives)

10. Project description:

For many years, the EFSA has been trying to clarify that the use of food additives is necessary and in most cases safe to be used in foodstuffs, but the lingering scares of the 80's and 90's around food additives and their effects on health still pose a barrier for the full comprehension of what food additives are and their role on food in general. Given the growing physical distance between food production, transformation, commercialization and consumption, the need for new and more efficient food additives increases. Concomitantly, the general public should also be well informed to reduce distrust and take informed judgments about what they eat and what is added to their food.

The FTRACE is composed of two essential technological modules. One takes the form of a smartphone app (iOS and Android) that lists all the food additives approved in the EU, and also displays their safety, admissible daily intake, links to the EFSA's approval documents and independent research, as well as methods of obtaining the additive, among other relevant information. All these information is stored in the second module, a server side component accessible through RESTful web services. The food enterprises willing to participate will be given a QRCODE and/or an RFID tag to be placed on the labels of their products. By using the FTRACE app, when scanning the QRCODE or reading the RFID tag, the consumer will be shown the food additives used to produce the food they have just scanned. In certain situations, the user can also identify the product to the system through a picture or barcode scanning, depending on the product. The app will also allow the consumer to login, in order to provide the EFSA with information regarding population/consumer habits and risks of overexposure, while allowing the user/consumer to have a tailored experience with advice regarding its eating habits.

EFSA's strategic priority 1, 8 and 24 will be met by using the app to calculate the amounts of food additives and the type of food that people within the EU are consuming, allowing to understand population eating patterns and food risk prevention. Assessment of the

amount of chemicals
that consumers intake, allowing for action to be taken if overexposure is detected while fostering comprehension of the different chemicals consumed by a user daily, weekly, monthly and yearly, allowing to understand the cocktails of chemicals they are exposed through food.

The app will be developed by the Polytechnic Institute of Bragança (Portugal) by joining the BioChemCore food research group, based in the Mountain Research Centre and the communication and informatics department of the School of Technology and Management of Bragança. After producing the application, it will be tested locally, with the support of the science and technology park, Brigantia Ecopark, and then scaled up to the Portuguese market, in line with the identified national priorities defined by the EFSA's focal point for Portugal, ASAE.

This project also takes into account the EFSA Strategy 2020, namely widen EFSA's evidence base and optimize access to its data. Co-develop tools to facilitate exchange of data from different sources improving data interoperability.

11. MS organisation(s) involved:

Polytechnic Institute of Bragança:

- Mountain Research Centre - Isabel C.F.R. Ferreira, Márcio Carocho; iferreira@ipb.pt, mcarocho@ipb.pt
- School of Technology and Management – Rui Pedro Lopes; rlopes@ipb.pt

Brigantia Ecopark:

- Paulo Piloto

12. Project planning timeline:

The preview of the project is to last 3 years:

1st year – Development of the two application modules; Dissemination of the project through the media, in scientific forums and food fairs;

2nd year – Arrangements with possible companies to take part in the project by allowing the QRCODE/RFID tag to be added to their label; Launching the app in the Google Play and Apple store for users to understand the usability and report eventual bugs; Launch the QRCODES/RFID tag on the foodstuffs

3rd year – Bug correcting; presentation of the results (consumer acceptability, usability); analysis of consumer behaviors based of food choices

13. Main Keys:

Food additives, mobile apps, emerging food risks, consumer awareness, improve data interoperability to facilitate data exchange.

14. Link to related documents (if any):

- Carocho, M., Barreiro, M.F., Morales, P., Ferreira, I.C.F.R. (2014). Adding molecules to food, pros and cons: A review on synthetic and natural food additives. **Comprehensive**

Reviews in Food Science and Food Safety, 13, 377-399. http://dx.doi.org/10.1111/1541-4337.12065

- Carocho, M., Morales, P., Ferreira, I.C.F.R. (2015). Natural food additives: *Quo vadis?* **Trends in Food Science and Technology**, 45, 284-295. http://dx.doi.org/10.1016/j.tifs.2015.06.007

- Martins, N., Roriz, C.L., Morales, P., Barros, L., Ferreira, I.C.F.R. (2016). Food colorants: Challenges, opportunities and current desires of agro-industries to ensure consumer expectations and regulatory practices. **Trend in Food Science & Technology**, 52, 1-15. http://dx.doi.org/10.1016/j.tifs.2016.03.009

- Commission Regulation 1129/2011 – Union list of food additives - http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32011R1129&from=EN

- Kaptan, B. & Kayisoglu, S. (2015). Consumers' attitude towards food additives. **American Journal of Food Science and Nutrition Research**, 2, 21-25.

- Mepham, B. (2011). Food additives: An ethical evaluation. **British Medical Bulletin**, 99, 7-23. http://dx.doi.org/10.1093/bmb/ldr024

- Bearth, A., Cousin, M., Siegrist, M. (2014). The consumer's perception of artificial food additives: Influences on acceptance, risk and benefit perceptions. **Food Quality and Preference**, 38, 14-23. http://dx.doi.org/10.1016/j.foodqual.2014.05.008

- Wu, L., Zhong, Y., Shan, L., Qin, W. (2013). Public risk perception of food additives and food scares. The case in Suzhou, China. **Appetite**, 70, 90-98. http://dx.doi.org/10.1016/j.appet.2013.06.091

- Mesquita-Pires, C., & Lopes, R. P. (2013). Preschool Observation Supported by Smartphone Applications. In International Conference on Innovation, Documentation and Teaching Technologies: New Changes in Technology and Innovation. Valencia, Spain.

- Mesquita-Pires, C., & Lopes, R. P. (2014). Data Model and Smartphone App in an Observational Research Social Network. In 6th International Conference on Computer Supported Education - CSEDU 2014. Barcelona, Spain. https://doi.org/10.5220/0004837701310138

Template for first joint projects ideas under the EU RAA

1. Country:

Portugal (2)

2. Project title:

Dietary exposure assessment of chemical contaminants

3. Project link to the Delphi priorities / EFSA Strategy topics

3. Common data collection/ surveillance scheme

8. Harmonization of methods for risk assessment of chemical contaminants.

4. Project description:

Dietary exposure assessments combine food consumption data with data on the concentration of chemicals in food. The resulting dietary exposure estimate is then compared with the relevant toxicological reference value for the food chemical of concern.

In this project individual food consumption data obtained applying the general principles for the collection of national food consumption data recommended by EFSA (The National Food, Nutrition and Physical Activity Survey, www.ian-af.pt) will be combined with concentration of chemicals in foods obtained through implemented monitoring schemes by ASAE.

This project also takes into account the EFSA Strategy 2020, namely widen EFSA's evidence base and optimize access to its data. Work with data providers to promote a culture of openness and sharing. As well as promoting data collaborative opportunity to promote innovation, new knowledge and applications of scientific data.

5. MS organisation(s) involved:

Faculty of Nutrition and Food Sciences of the University of Porto (FCNAUP);
i3S – Institute for Research and Innovation in Health;
Faculty of Medicine of the University of Porto (FMUP);
Institute of Public Health of the University of Porto (ISPUP)
Authority for Economic and Food Safety (ASAE)

Duarte Torres (FCNAUP/i3S/ISPUP), dupamato@fcna.up.pt
Carla Lopes (FMUP/ISPUP), carlal@med.up.pt
Filipa de Melo Vasconcelos (ASAE), fmvasconcelos@asae.pt
Maria Manuel Mendes (ASAE), maria.mendes@asae.pt
Mafalda Costa (ASAE), amcosta@asae.pt

6. **Project planning timeline:**

   TBD

7. **Main Key's: Food Consumption data**; Exposure assessment of **Chemical Contaminants**; Optimise **access to data** & promoting the development of **collaboration platforms** in a wider level.

8. **Link to related documents (if any):**

- European Food Safety Authority, 2014. Guidance on the EU Menu methodology. EFSA Journal 2014;12(12):3944, 77 pp. doi:10.2903/j.efsa.2014.3944
- European Food Safety Authority; Overview of the procedures currently used at EFSA for the assessment of dietary exposure to different chemical substances EFSA Journal 2011;9(12):2490. [33 pp.] doi:10.2903/j.efsa.2011.2490.

Template for first joint projects ideas under the EU RAA

1. Country:

Portugal (3)

2. Project title:

Risk assessment of chemical food contaminants and its mixtures in infant and baby food and its impact on children´s health

3. Project link to the Delphi priorities / EFSA Strategy topics

10. Infant and baby food. & 9. Cumulative exposure assessment (e.g. for pesticide residues/ PAHs)

24. Cocktail effects (health risk assessment of chemical mixtures, e.g. food additives.)

4.Project description:

There is growing concern within public health about food contaminants involvement in human diseases and particularly related to children´s exposure through contaminated food. The natural co-occurrence of these compounds (heavy metals, pesticide residues, mycotoxins and PAHs) is an increasing concern due to the possibility of interactions between contaminants that could exert greater toxicity and/or carcinogenicity than exposure to single compounds. Addressing these questions, this project propose an holistic approach developed by a multidisciplinary team gathering data from food contaminants occurrence and food consumption in order to assess the risk of exposure of children to single and multiple chemical food contaminants present in infant and baby food. The impact on children´s health will be simulated by using in vitro assays to simulate the interactive effects on toxicity and bioavailability. For risk assessment, deterministic and Monte Carlo simulation (probabilistic approach) will be developed and calculations will be performed using @RISK software or similar. For the risk characterization, the outputs of exposure, namely the daily intake values, will be compared with the reference dose values. For carcinogenic compounds, EFSA guidelines will be followed. For the cumulative risk assessment of multiple chemical food contaminants (chemical mixtures), the Concentration Addition (CA) concept will be used. The interaction effects between food contaminants including its toxicity and bioavailability

will be addressed by using

cyto and genotoxic tests and in vitro digestion assays, respectively. This novel approach will provide crucial information for improving children health and safety, implementing and providing data and tools for a more accurate children health risk assessment.

MS organisation(s) involved: [Contact details (name and email) of the responsible national body(ies)] **Portugal** (National Institute of Health Dr. Ricardo Jorge INSA, Departments of Food and Nutrition, Epidemiology and Genetics ; INSA President: Fernando de Almeida). Administrative contact: isabel.oliveira@insa.min-saude.pt Scientific contact: Paula Alvito; paula.alvito@insa.min-saude.pt

The Netherlands (RIVM)

France (INRA)

5.Project planning timeline:

Task Nº	Task Denomination	Partner responsible for task	Year 1											Year 2										
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	**Multiple determination of food contaminants and legislation values**	INSA (PT)																								
	i) Bibliography review & most consumed food sample purchase																									
	ii) LC-MS/MS method development																									
	iii) Food contaminants determination																									
2	**Evaluation of toxic effects of food contaminants mixtures**	INRA (FR)																								
	i) Bibliography review+purchase reagents																									
	ii) cyto and genotoxic effects of mixtures																									
3	**Bioaccessibility and absorption of food contaminants mixtures**	INSA (PT)																								
	i) Bibliography review + training +purch eq.																									
	ii) digestion assays																									
	iii) Intestinal absorption																									
4	**Children exposure assessment**	RIVM (NL)																								
	i) Bibliography review + training																									
	i) Database																									
	ii) Dietary record + interviews																									
	iii) Exposure assessment																									
5	**Global evaluation**	all partners																								

6. Main Keys:

Are children daily exposed to food contaminants mixtures? Which?

Could this co-exposure produce health hazards to children?

Are there interactions between food contaminants? Are they additive or synergistic? Are there bioavailability differences in single compounds and mixtures?

7.Link to related documents (if any):

- Food Contaminants and Human Health - Challenges in chemical mixtures (2016). Eds.: Alvito P, Assunção R, Louro H, Silva MJ, Vasco E. Publisher: National Institute of Health Doutor Ricardo Jorge, Lisbon, Portugal http://hdl.handle.net/10400.18/3214.
- Assuncao R., Silva M.J., Alvito P. (2016). Challenges in risk assessment of multiple mycotoxins in food, World Mycotoxin Journal (OPEN ACESS), DOI 10.3920/WMJ2016.2039
- Assunção R,Vasco E, Nunes B, Loureiro S, Martins C, Alvito P (2015). Single-compound and cumulative risk assessment of mycotoxins present in breakfast cereals consumed by children from Lisbon region, Portugal. Food and Chemical Toxicology. 86, 274-281, DOI: 10.1016/j.fct.2015.10.017.
- Lotti Egger et al (2015). The harmonized INFOGEST in vitro digestion method: From knowledge to action. Food Research International. http://dx.doi.org/10.1016/j.foodres.2015.12.006

Template for first joint projects ideas under the EU RAA

1. **Country:**
   Portugal (4)

2. **Project title:**

Development of a monitoring and transmission system of exposure data to food additives in specific groups of population

3. **Project link to the Delphi priorities / EFSA Strategy topics**
   Topic 3 – Common data collection/surveillance scheme.

4. **Project description:**
   The report of data about exposure to food additives to the European Commission is already a requirement of INSA. The objective of this project is to create a network of data providers to collect, analyse and perform the exposure assessment to food additives. This system would be created involving consumption data providers and food industry in order to have further detailed information than the one provided on the labelling.

   The priority to exposure assessment will target specific groups of population that eat specific types of food that may provide a higher exposure to some food additives (children, diabetics, older people, etc.), although the ultimate objective is to create a system that can be used for these groups and also the general population.

   The previous experience that INSA has in data compiling and transmission using SSD is one of the major advantages for the success of the project.

   This project aims to set up cooperation initiatives that make the best use of expertise for scientific assessment through a partnership between scientific experts of different organisations. In this sense, this project will to stimulate competent organizations to build up and share their resources and expertise and foster the growth of the Risk Assessment Community.

5. **MS organisation(s) involved:**
   The National Institute of Health Doutor Ricardo Jorge (INSA) – m.antonia.calhau@insa.min-saude.pt; possibly other national institutions (namely the Portuguese Economic and Food Safety Authority (ASAE) – fmvasconcelos@asae.pt among others), and including food industry.

6. **Project planning timeline:**
   To be defined – approximately 3 years

7. **Main Keys: Capacity Building sharing Expertise and resources; Strengthening Cooperation with counterparts**.

8. **Link to related documents (if any): - -**

Template for first joint projects ideas under the EU RAA

1. **Country:**
   Portugal (5)

2. **Project title:**

Development of a foodborne outbreak monitoring system and data transmission

3. **Project link to the Delphi priorities / EFSA Strategy topics**
   Topic 3 – Common data collection /surveillance scheme
   Topic 12 – Systems for monitoring and characterising microbes isolated from food, environment and human illness cases;
   Topic 15 – Microbial food pathogens (in general);
   Topic 18 – Zoonoses (in general, including bio-hazards, MRSA etc.).

4. **Project description:**
   In Portugal data about foodborne outbreaks is dispersed due to the participation of several different public institutions in their investigation, leading to under-reporting. The objective of this project is to create new procedures and foodborne outbreak investigation strategies in order to improve the system and to increase the report of data to European institutions (EFSA/ECDC).

   This would be achieved using the know-how from partner institutions of other Member States.

   The previous experience that INSA has in data compiling and transmission using SSD is one of the major advantages for the success of the project. Other derives from directly intervention of ASAE on the spot with all the procedure of the inspection which covers the traceability of all global situations.

   Under the project "Pilot project on the implementation of SSD2 in the frame of the electronic transmission of harmonised data collection of analytical results to EFSA", INSA and other national institutions developed a data transmission system that can be improved to include epidemiological information for foodborne outbreak investigation.

5. **MS organisation(s) involved:**
   The National Institute of Health Doutor Ricardo Jorge (INSA) – m.antonia.calhau@insa.min-saude.pt; possibly other national institutions (namely the Portuguese Economic and Food Safety Authority (ASAE)- fmvasconcelos@asae.pt ; Directorate-General of Health (DGS), Public Health Authorities among others) and international institutions.
6. **Project planning timeline:**
   To be defined – approximately 3 years
7. **Main Keys: building up Knowledge Community sharing resources and expertise – work sharing increasing EU's Scientific assessment capacity and efficiency.**
8. **Link to related documents (if any): --**

Template for first joint projects ideas under the EU RAA

1. **Country:**
   Portugal (6)

2. **Project title: PT6**

Development of a control system of PAHs and other food processing contaminants resulting from traditional culinary methods

3. **Project link to the Delphi priorities / EFSA Strategy topics**
   Topic 8 – Harmonisation of methods for risk assessment of chemical contaminants;
   Topic 9 – Cumulative exposure assessment (e.g. for pesticide residues/ **PAH's**).

4. **Project description:**
   In Portugal there is the tradition of regularly grilling on charcoal (barbecue). This culinary method is used often, either in restaurants or private homes, allowing for the possible contamination of food with PAHs and other food processing contaminants. This national and traditional frequent use, all year round, of barbecue justifies the creation of a control system adapted to a presumable high exposure to these contaminants.

   The food consumption data by this cooking process, soon to be available (2017) from the National Food Survey, will provide information to evaluate the exposure of Portuguese Population, providing an important contribute to the future control system. Also, INSA laboratories may provide support in developing the sampling process and having the analytical methodology for the quantification of these contaminants in place.

   ASAE through its National Sampling Plan (PNCA -surveillance) can provide the collection of the respective samples.

   The previous experience that INSA has in data compiling and transmission using SSD is one of the major advantages for the success of the project because it would allow for the creation of a control system prepared for the future data transmission to European institutions.

5. **MS organisation(s) involved:**
   The National Institute of Health Doutor Ricardo Jorge (INSA) – m.antonia.calhau@insa.min-saude.pt; possibly other national institutions (namely the Portuguese Economic and Food Safety Authority (ASAE) – fmvasconcelos@asae.pt among others).
6. **Project planning timeline:**
   To be defined – approximately 3 years

7. **Main Keys**: Food Consumption Data; Cumulative exposure assessment: work sharing resources and expertise increasing EU's scientific assessment capacity and efficiency.

8. **Link to related documents (if any): --**

Template for first joint projects ideas under the EU RAA

1. **Country:**
   Portugal (7)

2. **Project title: PT 7**

Estimating the burden of foodborne diseases in Portugal

3. **Project link to the Delphi priorities / EFSA Strategy topics**
   18. Zoonoses (in general, including bio-hazards, MRSA etc.)
   15. Microbial food pathogens (in general)

4. **Project description:**
   Burden of disease (BoD) methodologies are increasingly recognized as a powerful tool to identify food safety priorities and provide scientific evidence for risk management strategies. They allow for an objective comparison of the health impact of different foodborne diseases with and between countries through the application of harmonized health metrics.

   Recent World Health Organization's BoD estimates have demonstrated the high health impact of food contaminated with pathogens or chemicals globally and regionally (WHO, 2015). While these estimates are crucial to raise awareness and guide policies, they're the product of an enormous research initiative that faced substantial data challenges. Precise national disease burden estimates are essential to inform policy-makers and allocate food safety resources. Due to public health surveillance data gaps, very few countries have been able to embark in such initiatives.

   We aim to collect data and develop BoD methods that are fit to the national level and rank foodborne diseases in Portugal. The specific objectives are to:

   1. Estimate the level of underreporting of selected foodborne diseases in Portugal.

   2. Produce burden of foodborne disease estimates in terms of incidence, mortality and disability adjusted life years (DALYs).

   3. Rank foodborne diseases in terms of their public health impact in the country.

   4. Provide results that can be translated into food safety policy/interventions in the country.

   Project activities will include:

   a) Identification and standardization of food borne illness data sources,

   b) A medical care facilities survey on enteric disease case handling to estimate multipliers for underdiagnose and underreporting,

   c) A population survey to provide data for correction of underestimation of the true incidence of selected foodborne diseases in Portugal,

d) Forming an interdisciplinary working group to estimate DALYs,

e) Development of online user friendly tools to assist authorities in future updates of BoD estimates.

It is anticipated that the output of this project will be useful for prioritisation of foodborne diseases as an issue within the country, prioritisation of specific foodborne diseases, and provision of a baseline against which to evaluate future food safety interventions.

Finally point out that this project takes into account the EFSA Strategy 2020, aiming to set up collaboration initiatives that make the best use of expertise for scientific assessment through a partnership between several organisations and scientific experts and to increase de capacity building in the EU scientific community.

5. MS organisation(s) involved:

Considering "risks" to be multidimensional and requiring integrated and holistic approaches to be tackled, this consortium will be framed by:

- **University of Lisbon's (competent organization according to Article 36) College Food, Farming and Forestry (F3)** - a new platform at University of Lisbon that enables transversal initiatives. Current societal challenges demand science more attentive to social and ecological contexts of food production and agroforestry to face many of today's problems. ULisboa "colleges" are the only statutory structures that gather professors, lecturers and researchers from different faculties, institutes and research units to develop new cross-cutting areas of knowledge and, in so, addressing multiple and interlinked challenges, which require holistic and integrative approaches. Since College F3 integrates members for natural and environmental sciences, social sciences, exact sciences, computer sciences and engineering, law or health (all working on food and agroforestry issues), it turns possible to co-produce with national and international food safety agencies, scientific knowledge, data access, exchange and analysis methods, and technology development and harmonization to foster hubs for the community dealing with food risk assessment as a whole.
  (contacts: Maria do Rosário Bronze: mrbronze@ff.ul.pt and Maria João Fraqueza: mjoaofraqueza@fmv.ulisboa.pt)
  College F3's delivers multidisciplinary social capital. University of Lisbon College F3 is the proponent organization and within this network, the internal linkages will be coordinated by:
  - ***Faculdade de Medicina Veterinária da Universidade de Lisboa (Fac. of Veterinary Medicine)***
    Telmo Nunes (tnunes@fmv.ulisboa.pt)
    Maria João Fraqueza (mjoaofraqueza@fmv.ulisboa.pt)
  - ***Insituto Superior de Agronomia da Universidade de Lisboa (School of Agriculture)***

Stakeholders will interact with this network (contacts to be confirmed)**:** e.g. Direção-Geral de Alimentação e Veterinária (DGAV), Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA)

- **Autoridade de Segurança Alimentar e Económica (ASAE)**
  Filipa Melo de Vasconcelos (fmvasconcelos@asae.pt)

6. **Project planning timeline:** TBD

7. **Main Keys**: Increasing Scientific Assessment capacity and efficiency, microbiological risk assessment, foodborne diseases

8. **Link to related documents (if any): --**

Template for first joint projects ideas under the EU RAA

1. **Country:**
   Portugal (8)

2. **Project title: PT8**

Risk evaluation of herbal food supplements - drug interactions

3. **Project link to the Delphi priorities / EFSA Strategy topics**
   Main topic: Generic 5. Risks/benefits of botanicals/herbals in food supplements
   Sub-topics: Generic 1. Methods and systems for identifying emerging food risks
   Nutrition 27. Food supplements risk/benefits (in general).

4. **Project description:**

The classification of a product as a food supplement is not always clear-cut. In fact, these products overlap and span category borders with other products, including drugs used by humans and phytotherapeutic products (or traditional medicinal herbal). The dose of active substance or class in which it is inserted is sometimes determinant for the classification of a given product.

Although a food supplement is offered to be used as a complement or an increment of diets, it is well known the recurrent use for preventing or treating diseases, as if it was a drug without medical supervision. A more serious risk is the concomitant use of supplements with an established therapy, under a diagnosed disease. In this context, food supplements are identified as a potential major public health risk, especially in the case of herbal supplements or extracts of plants.

The project focus is:

(i) To collect information of all botanicals/herbals or plant extracts commercially available as food supplements and to identify their active substances, with a nutritional or physiological action and to quantify their effective content.

(ii) To list the medicinal products for human use and herbal medicinal products (border products) containing the same active ingredients and to indicate the effective dose (therapeutic indication).

(iii) To compile scientific evidence about the active substances from plant extracts that will substantiate effective doses and/or the doses shown to have toxicity. Risk assessment evaluation should be done using data from *in vivo* studies with human, animal and *in vitro studies*. Conclusions about the efficacy and also the safety of the supplements are possible can be obtained.

(iv) To cross information about the therapy used in the treatment of some diseases and the supplements more consumed in the market in order to assess potential interactions "supplement x drug", such as potentiation effect (synergistic), decrease effect, or even inhibiting effect (antagonistic).

(v) To "create" a service of "food supplement vigilance service" similar to the existing Pharmacovigilance National Service for drugs, aiming to guarantee the safety of citizens and end-users and allowing the possibility to detect, assess and prevent adverse reactions to these food supplements.

(vi) To study the benefits of seaweed and phytoplankton intake in the diet of humans and animals, and the risks involved.

The whole project is rooted in the use of scientific data and commercial data, to create a platform that easily gives, to health professionals or even to consumers, a rapid and clear information about possible adverse effects on consuming medication and supplements.

This Project Idea is guided by an environmental and culture that reflects EFSA Values, namely: openness, innovation and cooperation. Also promotes innovative and collaborative approach, as well as to prepare for future Risk Assessment anticipating the new challenges. In sum, this project covering an increasingly complex questions in the food safety remit - herbal/botanicals in food supplements –which it is aligned with the EFSA Strategy 2020 through efficient operation of multidisciplinary partnership to strengthening the EU Scientific assessment capacity and Knowledge community.

5. MS organisation(s) involved:

Considering "risks" to be multidimensional and requiring integrated and holistic approaches to be tackled, this consortium will be framed by:

- **University of Lisbon's (competent organization according to Article 36) College Food, Farming and Forestry (F3)** - a new platform at University of Lisbon that enables transversal initiatives. Current societal challenges demand science more attentive to social and ecological contexts of food production and agroforestry to face many of today's problems. ULisboa "colleges" are the only statutory structures that gather professors, lecturers and researchers from different faculties, institutes and research units to develop new cross-cutting areas of knowledge and, in so, addressing multiple and interlinked challenges, which require holistic and integrative approaches. Since College F3 integrates members for natural and environmental sciences, social sciences, exact sciences, computer sciences and engineering, law or health (all working on food and agroforestry issues), it turns possible to co-produce with national and international food safety agencies, scientific knowledge, data access, exchange and analysis methods, and technology development and harmonization to foster hubs for the community dealing with food risk assessment as a whole.
  (contacts: Maria do Rosário Bronze: mrbronze@ff.ul.pt and Maria João Fraqueza: mjoaofraqueza@fmv.ulisboa.pt)
  College F3's delivers multidisciplinary social capital. University of Lisbon College F3 is the proponent organization and within this network, the following faculties and research units will coordinate the internal linkages:
  - ***Faculdade de Farmácia da Universidade de Lisboa (Fac. of Pharmacy)***
    Maria Eduardo Figueira (vasco.branco@ff.ulisboa.pt)
    Ana Cristina Ribeiro (acribeiro@ff.ulisboa.pt)
    Ana Marreilha dos Santos (apsantos@ff.ulisboa.pt)
    Bruno Sepodes (bsepodes@ff.ulisboa.pt)
    João Rocha (jrocha@ff.ulisboa.pt)
    Maria Luísa Mateus (lmateus@ff.ulisboa.pt)
    Maria Rosário Bronze (mrbronze@ff.ulisboa.pt)
    Olga Silva (osilva@campus.ul.pt)
  - ***Faculdade de Medicina Veterinária da Universidade de Lisboa (Fac. of Veterinary Medicine)***
    Fernando Afonso (fafonso@fmv.ulisboa.pt)
  - ***Instituto Superior de Agronomia da Universidade de Lisboa (School of Agriculture)***
  - ***Instituto de Ciências Sociais (Institute of Social Sciences)***
- **Partner organizations:** Autoridade Nacional do Medicamento e Produtos de Saúde

(INFARMED), Gabinete de Planeamento e Políticas (GPP), Direção Geral de Alimentação e Veterinária (DGAV) (*contacts to be confirmed*)

- **Autoridade de Segurança Alimentar e Económica (ASAE)**
  Filipa Melo Vasconcelos (fmvasconcelos@asae.pt)

- **International partners are invited to join the consortium.**

6. **Project planning timeline:**
   2 years (to be detailed)

7. **Main Keys**: New Challenges; Scientific evidence; botanicals/herbals in Food Supplements; clear information to health professionals and to consumers.

8. **Link to related documents (if any):**

Template for first joint projects ideas under the EU RAA

1. **Country:**
   Portugal (9)

2. **Project title: PT9**

Population-based patterns of food acquisition, packaging, preparation and consumption in pregnant women and in 3 months to 6 years-old children

3. **Project link to the Delphi priorities / EFSA Strategy topics:**
   Main topic: Chemical 10. Infant and baby food
   Sub-topics:
   Generic 1. Methods and systems for identifying emerging food risks
   Generic 4. Multiple contaminant impacts on the risk profile of foods
   Generic 7: Aggregated exposure (via cocktail effects, but including environmental/ food exposure)
   Microbiological. 15: Microbial food pathogens (in general)

4. **Project description:**
   The magnitude of the impact of food-associated health risks depends of the frequency and intensity of the consumption of specific food. When evaluating the risk and impact of eventual food-associated exposures (eg., pesticides, hormones, allergens, food additives) on health, population-based data has paramount value in providing crucial information and knowledge to understand and characterize the population segment(s) exposed, in terms of frequency, intensity, vulnerability (e.g, age, social-education level), context (eg., from the school menu, geographical context), among other information.

   Using the data gathered in the Portuguese National Food Survey, this project aims to:
   - Provide a detailed description of food consumption in pregnant women and children up to the 6th year of age, including food and recipe elements, dosage, conservation, packaging, acquisition, preparation
   - Understand frequencies of food intake, both in terms of regularity and dosage, observing the intake distribution in the population
   - Identify patterns of food intake, with a special focus of food with potential risk (eg., pesticides, hormones, food additives), which will allow to characterize subgroups with potential risk
   - Characterize food intake profiles according to
     - geographical and social-educational and economic context, and
     - food acquisition / source (eg., school, local market, supermarket),

which will be relevant to independently inform governmental bodies and policy makers and to implement monitoring strategies

- Project the national food intake patterns for the mother and children, establishing relationships and understanding casual effects with evidences for potential health risks and estimating the impact of general and selective policies in preventing exposure to food risks.

This Project based in official food intake patterns and characterizing food intake profiles, also takes into account the EFSA Strategy 2020, namely optimize access to data and developing a process to improve the interaction among the stakeholders involved through the guidance followed in the risk assessment process which enable to inform policy makers and to implement monitoring strategies.

5. **MS organisation(s) involved:**

Considering "risks" to be multidimensional and requiring integrated and holistic approaches to be tackled, this consortium will be framed by:

- **University of Lisbon's (competent organization according to Article 36) College Food, Farming and Forestry (F3)** - a new platform at University of Lisbon that enables transversal initiatives. Current societal challenges demand science more attentive to social and ecological contexts of food production and agroforestry to face many of today's problems. ULisboa "colleges" are the only statutory structures that gather professors, lecturers and researchers from different faculties, institutes and research units to develop new cross-cutting areas of knowledge and, in so, addressing multiple and interlinked challenges, which require holistic and integrative approaches. Since College F3 integrates members for natural and environmental sciences, social sciences, exact sciences, computer sciences and engineering, law or health (all working on food and agroforestry issues), it turns possible to co-produce with national and international food safety agencies, scientific knowledge, data access, exchange and analysis methods, and technology development and harmonization to foster hubs for the community dealing with food risk assessment as a whole.
  (contacts: Maria do Rosário Bronze: mrbronze@ff.ul.pt and Maria João Fraqueza: mjoaofraqueza@fmv.ulisboa.pt)
  College F3's delivers multidisciplinary social capital. University of Lisbon College F3 is the proponent organization and within this network, the following faculties and research units will coordinate the internal linkages:
  - ***Faculdade de Medicina da Universidade de Lisboa (Fac. of Medicine)***
    a. Instituto de Medicina Preventiva e Saúde Pública
       Paulo Nicola (pnicola@fm.ul.pt)
       Telma Nogueira (telmanogueira@fm.ul.pt)
    b. Departamento de Pediatria
       Ana Isabel Lopes (anaisalopes@sapo.pt)
  - ***Faculdade de Farmácia da Universidade de Lisboa (Fac. of Pharmacy)***
    Maria do Rosário Bronze (mrbronze@ff.ul.pt)

- **Autoridade de Segurança Alimentar e Económica (ASAE)**
  Filipa Melo Vasconcelos (fmvasconcelos@asae.pt)

- **International partners are invited to join the consortium.**

6. **Project planning timeline:**
   12 months - Jun 2017 – Jun 2018 (to be detailed)

7. **Main Keys: consumption of specific food; patterns of food intake; exposure to food risks; food consumption data.**

8. **Link to related documents (if any):**
   The National Food, Nutrition and Physical Activity Survey - http://ian-af.up.pt/en

Template for first joint projects ideas under the EU RAA

1. **Country: PT10**

Portugal (10)

2. **Project title:**

Integrating social, food and health data to deliver knowledge for the identification of emerging risks along the food chain

3. **Project link to the Delphi priorities / EFSA Strategy topics**

The project is transversal to most Delphi priorities, with more emphasis on 1, 3, 8, and 19.

4. **Project description:**

The repeating occurrence of unexpected food safety incidents and related damage demonstrates the need for the early identification of the risks and hazards involved. The early identification of food safety risks will enable risk managers to develop pro-active measures for prevention and control. The identification of new hazards and emergent risks is a challenge for all researchers, epidemiologists and food safety managers regarding the extraction of information on early signals, which are of diverse nature and origin. This relevant early signals leading to emerging food safety risks is expected to be found in the total body of data directly and indirectly related to the production of food. A changing demography, the adoption of novel diets, foods and ingredients, new consumer behaviors largely influenced by multinational trade and retail companies, the effects of globalization, the advent of "big data" and the opportunities created by fast technological advances, such as Information and Communication Technologies (ICT), create a new paradigm for food safety that demands citizen engagement and social economic indicators to be part of a fit-for-purpose early risk identification.

The following project aims to:

- Define consented methodological approaches for stakeholder triangulation/engagement to create a network that includes different actors and stakeholders related to the food chain: (import companies, primary sector associations, distributors, governmental and regulatory agencies, health institutes, hospitals, research institutes, environmental agencies, food trade and consumers associations) in order to map and get access to relevant data and also hastening integration of the EFSA data. Innovative social and economic data can be of a quantitative nature, such as industry and retail reports, consumer surveys, health registries, but also qualitative, such as in-depth studies on food consumption practices or stakeholder and citizen workshops concerning particular risks. Also innovative, health data can be obtained from national medical records and from food and nutrition surveys;
- Collect information about food habits and social behaviors in different EU states (south Mediterranean and northern countries) with different patterns of food/social behaviors, and characterization of food preparation at consumer home;
- Development of an information system for collection/ registration and analysis of ingredient and nutritional label data with voluntary participation of food distributers stakeholders

- Develop an algorithm for automatic data mining in media, social media, scientific publications and other information sources. This aims to detect changes of consumer behavior/attitudes and clues about the use of food items with potential associated hazards. Data classification of data mined and retrieved based on a glossary of terms and indicators produced by experts working or researching along the whole food chain;
- Develop an integrative model using "multi-criteria decision sciences" approaches;
- Verification, by experts from partner organizations involved, of the assumptions and emerging food risk indicators signaled by the model/system developed, including the implementation of selected *case studies*, if required;
- Validation by EFSA experts panels.

The innovative character results from screening, collecting and integrating data from different sources, including those typically less observed, such as social behaviors, medical registries, industry and retail reports, or references on the newspapers, media or social media. Ultimately, a model will be developed to integrate this data from distinct sources, to deliver a tool rooted in a consented methodology to anticipate food risks, truly from farm-to-fork.

This project will to invest in competence development and capability transfer, common programming and work-sharing, and to grow national and international level expertise. Also takes into account the EFSA's Strategy 2020, namely Build the EU scientific assessment capacity and knowledge community. Finally aims to prepare the future risk assessment challenges in a dynamic food safety system perspective.

5. MS organisation(s) involved:

Delivering innovative approaches of risk assessment rooted in independent scientific advice along the food chain, adding value with societal impact in global food safety, requires multidisciplinary and transdisciplinary approaches. Recognizing that, the project will be headed by:

- **University of Lisbon's (competent organization according to Article 36) College Food, Farming and Forestry (F3)** - a new platform at University of Lisbon that enables transversal initiatives. Current societal challenges demand science more attentive to social and ecological contexts of food production and agroforestry to face many of today's problems. ULisboa "colleges" are the only statutory structures that gather professors, lecturers and researchers from different faculties, institutes and research units to develop new cross-cutting areas of knowledge and, in so, addressing multiple and interlinked challenges, which require holistic and integrative approaches. Since College F3 integrates members for natural and environmental sciences, social sciences, exact sciences, computer sciences and engineering, law or health, it turns possible to co-produce with national and international food safety agencies, scientific knowledge, data access, exchange and analysis methods, and technology development and harmonization to foster hubs for the community dealing with food risk assessment as a whole.

  College F3 faculties and institutes are: Fac. of Architecture, Fac. of Sciences, School of Law, Fac. of Pharmacy, Fac. of Humanities, Fac. of Medicine, Fac. of Veterinary Medicine, Institute of Social Sciences, Institute of Geography & Spatial Planning, School of Agriculture, and School of Economics and Management and "Técnico" (school of engineering).

(contacts: Maria do Rosário Bronze: mrbronze@ff.ul.pt and Maria João Fraqueza: mjoaofraqueza@fmv.ulisboa.pt)

- **Integrated stakeholders: The following stakeholders, in Portugal, interact with this network** (contacts to be confirmed)**:** Direção-Geral de Alimentação e Veterinária (DGAV), Agência Portuguesa do Ambiente (APA), Instituto Português do Mar e da Atmosfera (IPMA), Direção Geral de Saúde (DGS), Confederação dos Agricultores de Portugal (CAP), Autoridade Nacional do Medicamento e Produtos de Saúde, (INFARMED), Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA), Associação de Grossistas de Produtos Químicos e Farmacêuticos (Groquifar), Associação Portuguesa de Empresas de Distribuição (APED), SONAE Distribuição and Jerónimo Martins.

- **Autoridade de Segurança Alimentar e Económica (ASAE)**
  Filipa Melo Vasconcelos (fmvasconcelos@asae.pt)

- **International partners are invited to join the consortium.**

6. **Project planning timeline:**
   The project is predicted to have a 3-year duration (2017-2020)

7. **Main Keys: Build Scientific Assessment capacity and Knowledge community; development of collaborative platforms; Strengthen EU preparedness to anticipate and respond to Food Safety Risks**

8. **Link to related documents (if any): --**

Template for first joint projects ideas under the EU RAA

1. Country:
Portugal (11)

2. Project title: PT11
Impact of food intake patterns on antibiotic resistance profile in human microbiome, its antibiotic resistance profile and human vulnerability for infections

3. Project link to the Delphi priorities / EFSA Strategy topics:
Main topic: Microbiological priorities 14. Antimicrobial/ antibiotic resistance
Sub-topics:
Generic 1. Methods and systems for identifying emerging food risks
Nutrition 25. Indirect effects on human health due to modified agricultural practices

4. Project description:
The use of antibiotics in food-producing animals has been increasing, along with the emergence of antibiotic resistance in humans. The associated risk and the concern between a potential linkage between these two phenomena has justified major call for research and policy action, but it is not clear the impact that the intake of food produced with the use of antibiotics might have i) on the human microbiome profile, ii) the human antibiotic resistance profile, and iii) the human vulnerability for disease, in particular infectious disease.
Aims:

1. To enlist, in detail, food which production is associated with antibiotic use, concerning aspects like the origin, antibiotics and its dosages distributions, modes of preparation and conservation, evidence of presence of antibiotics and antibiotics metabolites on food products accessible for consumption
2. To describe population general and subgroups profile of food consumption, identifying aspects like low and high consumers of putative exposing food (frequency and quantity), its characterization (age; sex; geography; consumption from acquired, school, restauration, institutions; socioeconomic level), and specially health vulnerable populations (e.g., children; special chronic disease [COPD, diabetes, allergies]).
3. To evaluate the antibiotic resistance profile of microorganisms present in animals and vegetable food, characterizing potential contaminations sourced at the productions sites, and assessing if those contaminant species are transient or persistent in those environments.
4. To project the population exposure to food-associated antibiotic resistant strains in the general population, special strata (e.g., children, elderly) and other vulnerable populations (e.g., with special disease).
5. To compare highly exposed to low exposed individuals to food-associated antibiotic resistant pathogenic strains concerning
    - Their human microorganisms profile (oral, nasal, skin, gut) and its antibiotic resistance profile;
    - Their medical history of propensity for infectious diseases (e.g., acute respiratory disease, pneumonia, other acute infections), allergic diseases, decompensation of chronic disease (e.g., COPD, diabetes), both in terms of frequency and diseases duration, accounting for the individual antibiotic use

6. To study
the antimicrobial resistance in water effluents in rivers and estuaries. Population impact in the water quality and effluents. Aquaculture and water quality in rivers and estuaries.

Methods (multi-methods and multidisciplinary approach):
- **Aim 1:** Analysis of evidence and current existing national and international databases
- **Aim 2:** Analysis of the detailed food consumption data (frequency, dosage, preparation, conservation, mode of acquisition) from the National Food Survey
- **Aim 3 and 4:** Laboratory analysis of specific food samples from selected sources, as informed from aim 1) and 2); Epidemiological analysis;
- **Aim 5A:** Cross-sectional study from participants identified in a food survey, with the collection of medical history and specimens for laboratory analysis
- **Aim 5B:** Retrospective study using personal medical record data from aim 5A participants
- **Aim 6:** Case-control study from community laboratory data defining, for specific microorganism and antibiotics, cases / controls as antibiograms with resistance or without resistance; and analysis the profile of food consumption by phone interview.

This project aims to set up cooperation initiatives that make the best use of expertise for multidisciplinary scientific assessment through a partnership between experts of different organisations. In this sense, this project will to stimulate competent organizations to build up and share their resources and expertise and foster the growth of the Risk Assessment Community.

5. MS organisation(s) involved:

Considering "risks" to be multidimensional and requiring integrated and holistic approaches to be tackled, this consortium will be framed by:

- **University of Lisbon's (competent organization according to Article 36) College Food, Farming and Forestry (F3)** - a new platform at University of Lisbon that enables transversal initiatives. Current societal challenges demand science more attentive to social and ecological contexts of food production and agroforestry to face many of today's problems. ULisboa "colleges" are the only statutory structures that gather professors, lecturers and researchers from different faculties, institutes and research units to develop new cross-cutting areas of knowledge and, in so, addressing multiple and interlinked challenges, which require holistic and integrative approaches. Since College F3 integrates members for natural and environmental sciences, social sciences, exact sciences, computer sciences and engineering, law or health (all working on food and agroforestry issues), it turns possible to co-produce with national and international food safety agencies, scientific knowledge, data access, exchange and analysis methods, and technology development and harmonization to foster hubs for the community dealing with food risk assessment as a whole.
  (contacts: Maria do Rosário Bronze: mrbronze@ff.ul.pt and Maria João Fraqueza: mjoaofraqueza@fmv.ulisboa.pt)
  College F3's delivers multidisciplinary social capital. University of Lisbon College F3 is the proponent organization and within this network, the following faculties and research units will coordinate the internal linkages:
  - ***Faculdade de Medicina da Universidade de Lisboa (Fac. of Medicine)***
    a. Instituto de Medicina Preventiva e Saúde Pública
       Paulo Nicola (pnicola@fm.ul.pt)
       Telma Nogueira (telmanogueira@fm.ul.pt)
    b. Departamento de Pediatria
       Ana Isabel Lopes (anaisalopes@sapo.pt)
  - ***Faculdade de Medicina Veterinária da Universidade de Lisboa (Fac. of Veterinary Medicine)***
    Maria João Fraqueza (mjoaofraqueza@fmv.ulisboa.pt)
    Fernando Afonso (fafonso@fmv.ulisboa.pt)
  - ***Faculdade de Farmácia da Universidade de Lisboa (Fac. of Pharmacy)***
    Cristina Almeida (calmeida@ff.ul.pt)

Rosário Bronze (mrbronze@ff.ul.pt)

- **Autoridade de Segurança Alimentar e Económica (ASAE)**
  Filipa Melo Vasconcelos (fmvasconcelos@asae.pt)

- **Direção Geral da Saúde (DGS)**
  · Programa Nacional de Prevenção das Resistências aos Antimicrobianos – contact to be confirmed
  · Programa Nacional para a Promoção da Alimentação Saudável – contact to be confirmed

- **Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA)**
  contact to be confirmed

- **Direção Geral da Alimentação e Veterinária (DGAV)**
  contact to be confirmed

- **International partners are invited to join the consortium.**

6. Project planning timeline:
Mai 2017 to Jun 2019 (2 years)

7. **Main Keys**: AMR; Multi-methods and multidisciplinary approach; capacity building sharing expertise and resources; strengthening cooperation with counterparts

8. **Link to related documents (if any):**
   a. The National Food, Nutrition and Physical Activity Survey - http://ian-af.up.pt/en
   b. Human Microbiome Project – microorganims profiles in healthy and unhealthy humans, study and laboratory protocols for sampling (http://hmpdacc.org/)
   c. ECDC/EFSA/EMA first joint report on the integrated analysis of the consumption of antimicrobial agents and occurrence of antimicrobial resistance in bacteria from humans and food-producing animals – Jan 2015. http://ecdc.europa.eu/en/publications/publications/antimicrobial-resistance-zoonotic-bacteria-humans-animals-food-eu-summary-report-2014.pdf

Template for first joint projects ideas under the EU RAA

1. Country:
Portugal (12)

2. Project title: PT 12
Prenatal and postnatal exposure to food-associated risks: a longitudinal study along infancy and childhood

3. Project link to the Delphi priorities / EFSA Strategy topics:
Main topic: Chemical 10. Infant and baby food
Sub-topics: Generic 1. Methods and systems for identifying emerging food risks

4. Project description:
Project scope:
Infants and children are not "little adults". They have unique exposures and special vulnerabilities to environmental toxicants and thus they require an approach to risk assessment that considers their particular characteristics. Considering the alarming development and exposure to a great diversity of environmental toxicants, consistent data are urgently required at this age group (namely in children under 3 years), particularly those concerning chronic low-dose exposure and taking into account the country specific dietary consumption habits and behaviours. Children are particularly vulnerable to the effect of several environmental, including food, toxicants due to their complex and delicate growing process, immature metabolic pathways and eat/drink proportionally more than adults, adjusted to their body mass. The ultimate goal of this proposal is to formulate policies that will protect children against potential toxic agents and allow them to grow, develop, and reach maturity without incurring neurobehavioral impairment, immune dysfunction, reproductive damage, or increased risks of cancer as a consequence of environmental exposures in early life. Although several food-associated risks have been pointed out as having potential impact on children's health, beginning in the conception period, the clinical data concerning the risk exposure and consumption at an early age is scarce. The scope of this project is to document and to characterize, from the population perspective, the level and distribution of major food chemical risks, their attribution to food consumption and their potential impact on the children's health and development.
Specific aims:

- To describe general and subgroups profile of food consumption;
- To determine the levels of relevant exposure biomarkers both in mother and child (blood and breast-milk, cord-blood, hair, urine) and their correlation with risk exposure;
- To determine the levels of relevant toxicants/chemicals/heavy metals in a selected sample of core foods;
- To examine the clinical impact of toxicants/chemicals/heavy metals exposure, including a whole clinical outcome assessment (growth, neurodevelopment, metabolic, endocrine parameters, among others);

The relevant gathered data will allow to identify the risk assessment and exposure, expecting to further contribute to establish reference/safety levels at this specific age group. Ultimately, this information should:

- identify early effect biomarkers that may be predictive of risk;
- project potential food exposure risks to the general population (up to 3 years old)

- project the potential impact of policies aimed at reducing exposure of food risks

Project design:
With this aim, we propose to perform a cohort study from pregnancy up to 3 years old, repeatedly and concurrently examining detailed food and water consumption patterns, assessment of selected risk substances in food, biomarkers levels and clinical outcome (including growth, neurodevelopment, metabolic, endocrine parameters).
For this purpose, we will consider the determination (biomarkers and /or related metabolites) of the following exposures:

- Heavy Metals (mercury, selenium, lead, manganese);
- Pesticide residues;
- Endocrine disruptors (bisphenol, phthalates and phenols);
- Mycotoxins;
- Food additives.

These groups of chemicals/toxicants were proposed considering their recognised heavy toxic potential in human health, data scarcity at an early age and the institutional (national reference centers) expertise and technical resources availability in the field. Finally of utmost importance, the evidence based knowledge places Portugal as a high risk country concerning dietary consumption habits and chemicals/toxicants risk exposure, thus representing an interesting study model of this topic.
Population and Methods:

- **Population sample**: Cohort of ~400 children-mother pairs, since conception until 3 year-old children, follow-up every 6 months (12 evaluations) concerning:
- **Detailed food consumption**, through a Total Diet Study (TDS), including food composition, origin, cooking practices, conservation, packaging material
- **Biological samples** (mother: breast milk, hair, blood, plasma, urine sample; Child: baby hair; umbilical cord-blood)
- **Biomarkers** for toxicant monitoring studies (e.g.: Internal dose: Hg, MeHg and Se levels in the samples collected; Effect: selenoenzymes activity and GSH levels in plasma)
- **Child clinical outcome** (growth, neurodevelopment, metabolic, endocrine parameters, among others)
- **Food chemicals analysis** will include a wide range of high-standard techniques.

This project will to invest in competence development and capability transfer, common programming and work-sharing, and to grow national and international level expertise. Also takes into account the EFSA's Strategy 2020, namely Build the EU scientific assessment capacity and knowledge community

5. MS organisation(s) involved:

Considering "risks" to be multidimensional and requiring integrated and holistic approaches to be tackled, this consortium will be framed by:

- **University of Lisbon's (competent organization according to Article 36) College Food, Farming and Forestry (F3)** - a new platform at University of Lisbon that enables transversal initiatives. Current societal challenges demand science more attentive to social and ecological contexts of food production and agroforestry to face many of today's problems. ULisboa "colleges" are the only statutory structures that gather professors, lecturers and researchers from different faculties, institutes and research units to develop new cross-cutting areas of knowledge and, in so, addressing multiple and interlinked challenges, which require holistic and integrative approaches. Since College F3 integrates members for natural and environmental sciences, social sciences, exact sciences, computer sciences and engineering, law or health (all working on food and agroforestry issues), it turns possible to co-produce with national and international food safety agencies, scientific knowledge, data access, exchange and analysis methods, and technology development

and
harmonization to foster hubs for the community dealing with food risk assessment as a whole. (contacts: Maria do Rosário Bronze: mrbronze@ff.ul.pt and Maria João Fraqueza: mjoaofraqueza@fmv.ulisboa.pt)
College F3's delivers multidisciplinary social capital. University of Lisbon College F3 is the proponent organization and within this network, the following faculties and research units will coordinate the internal linkages:

- ***Faculdade de Medicina da Universidade de Lisboa (Fac. of Medicine)***
  c. Instituto de Medicina Preventiva e Saúde Pública
     Paulo Nicola (pnicola@fm.ul.pt)
     Telma Nogueira (telmanogueira@fm.ul.pt)
  d. Departamento de Pediatria
     Ana Isabel Lopes (anaisalopes@sapo.pt)

- ***Faculdade de Farmácia da Universidade de Lisboa (Fac. of Pharmacy)***
  e. Departamento de Ciências Toxicológicas e Bromatológicas
     Ana Cristina Ribeiro (acribeiro@ff.ulisboa.pt)
     Ana Marreilha dos Santos (apsantos@ff.ulisboa.pt)
     Cristina Almeida (calmeida@ff.ul.pt)
     Cristina Carvalho (cristina.carvalho@ff.ulisboa.pt)
     Maria Luísa Mateus (lmateus@ff.ulisboa.pt)
     Maria Rosário Bronze (mrbronze@ff.ulisboa.pt)
     Vasco Branco (vasco.branco@ff.ulisboa.pt)

- ***Instituto Superior de Agronomia da Universidade de Lisboa (School of Agriculture)***
     António Mexia (amexia@isa.ulisboa.pt)
     Luísa Louro (luisalouro@isa.ulisboa.pt)
     Miguel Mourato (mmourato@isa.ulisboa.pt)

- **Autoridade de Segurança Alimentar e Económica (ASAE)**
     Filipa Melo Vasconcelos (fmvasconcelos@asae.pt)

- **Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA)**
     Paula Alvito (paula.Alvito@insa.min-saude.pt)

- **International partners are invited to join the consortium.**

6. **Project planning timeline :**
   4.5 years (to be detailed)

7. **Main Keys**: Chemical Risks; chemical/toxicants risk exposure, risk assessment and exposure
8. **Link to related documents (if any)**

Template for first joint projects ideas under the EU RAA

1. **Country:**
   Portugal (13)

2. **Project title: PT 13**

Improving targeted risk communication activities and risk perception research for the topics of the EU risk assessment agenda

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   Topic 1: Methods and systems for identifying emerging food risks (e.g. new food-borne diseases**;**
   Topic 2: Development of standard risk-benefit assessment methods (of foods);

   Topic 5: Health Risks/benefits of botanicals/herbals in food supplements;

   Topic 27: Food supplements benefits/risk**;**

   Other: Qualitative criteria and quantitative limits within the frontiers between pharmacological & physiological effects

4. **Project description:**

   Food safety risk communication is currently used to improve the ongoing risk analysis process through societal engagement. Risk communication may be defined as the exchange of information and opinions concerning risk and risk-related factors among risk assessors, risk managers,consumers and other interested parties (FAO/WHO, 1998). Risk communication is an essential part of the risk analysis paradigm. The main goal of food safety risk communication has been to increase understanding among various food safety stakeholders regarding the rationale behind the decisions taken to assess hazards and manage food safety risks, and to help people to make more informed judgements about the food safety hazards and risks they face in their lives (EFSA, 2012).

   On the other hand, risk perception deals with health risk literacy as an emerging concept that involves the bringing together of people from both the health risks and literacy fields. Health literacy by itself builds on the idea that both health and literacy are critical resources for everyday living as recognized by WHO. However, the application of risk assessment criteria which is common in good investigative practice is often not sufficient to support the effectiveness of risk communication either in the context of the Authority's conventional role or in the expectations of the general public to anticipate eminent or emerging risks.

   To increase health risk literacy, EBC – Evidence Based Categorization of Risks is

proposed as necessary. A process chain for the detection of Emerging Risks (SOPs, KPIs e.g IT resources, data sources) shall also be defined to promote risk perception related to selected topics. Authorities have these responsibilities to ensure efficient management of their reputation and an harmonized approach would be desirable.

Many of the difficulties identified, especially from the point of view of the actual effectiveness of risk prevention vis-à-vis their anticipated perception of food safety, can be addressed with scientific methods and information technology based on evidence based procedures which are nevertheless based on validated methods.

The present study, mixed-method, with observational components complemented by longitudinal quantitative studies designs, focuses on the construction of a communication model with two goals- change of thought and behaviour change (pre- versus post-communication evaluation) and aims to develop a Evidence-based Guide to Procedures for Risk Communication on Food Safety to achieve that purpose.

A targeted risk communication strategy will be designed taking into account an Evidence Based Risk Categorization model, supported by hazard characterization, dose-effect assessment and exposure assessment scenarios. But even though these three phases are assured, the management of the impact of communication on the basis of risk perception will be addressed, by following important factors such as the influence of social media on the dissemination of information and opinions that expand in seconds with additive effects for the public in general.

The ultimate goal is a tool to circumscribe risk communication to target groups.

This Project Idea is guided by an environmental and culture that reflects EFSA Values, namely: scientific excellence, openness, innovation and cooperation. Also promotes innovative and collaborative approach, as well as to prepare for future Risk Assessment and Risk Communication anticipating the new challenges.

Finally, this project covering an increasingly complex questions in the food safety remit - Qualitative criteria and quantitative limits within the frontiers between pharmacological & physiological effects in food supplements –which it is aligned with the EFSA Strategy 2020 through efficient operation of multidisciplinary partnership to strengthening the EU Scientific assessment capacity and Knowledge community.

5. **MS organisation(s) involved:**

Norway, France and Switzerland as well as The Federal Institute for Risk Assessment (BfR), 2@bfr.bund.de, are potential partner organizations at national or EU level.

[Contact details (name and email) of the responsible national body(ies)]

6. **Project planning timeline:** TBD

7. **Main Keys**:

By the use of QSAR and state of the art PBPk modelling for hazard and risk assessment and substance grouping we will aim to filtrate the most relevant botanical/herbs for R/B assessment. Cooperation with BfR project regarding QSAR and Mode of action investigations and with projects supported by the Deutsche Forschungsgemeinschaft (DFG)

should support the
aim. Feedback from BfR on KNIME screening tool, overview on collected emerging issues and price trend analysis as a valuable proof of concept.

8. **Link to related documents (if any): Several** ID Briefing Notes issued at EREN Meetings, e.g. ID Nº 362 to 366 presented to EREN Meeting (13-14th November 2016)

TBD *– To Be Determined*
QSAR *– Quantitative Structure-Activity Relationships*
PBPk *– Physiologically-based Pharmacokinetic* models

Template for first joint projects ideas under the EU RAA

1. Country:

Portugal (14)

2. Project title: PT 14

Food Allergy Community Program

Management of food allergy in the community: Knowledge and practices in schools, restaurants and airplanes

3. Project link to the Delphi priorities / EFSA Strategy topics

Risk management of food allergens is listed as general priority 6 in the Delphi priority topic list: Allergenicity/ food allergens in general (risk assessment and management).
In the EFSA Strategy 2020, the development and implementation of harmonised methodologies and guidance documents for risk assessment across the EU along with the need to become a hub in methodologies, tools and guidance documents for risk assessment (particularly exploring innovative tools, to be made available through an open access and easy to use platform) are listed as operational objectives to prepare for future risk assessment challenges.

4. Project description:

Food allergy is growing public health problem and is increasing in prevalence. This alarming situation is a major concern for all types of foodservice stakeholders, including schools, restaurants and transport companies, and for the European political forces considering the recent Regulation on the provision of information to consumers regarding food allergies. In literature, is consensual the lack of information and education of the different stakeholders. Additionally, it is suggested that significant number of reactions occur in community services, obliging staff to cope with cases at risk of allergic reactions and highlighting the need of a proper training and education, trough viable and practical tools that overcome professionals' high training cost and time constraints.

The ***Food Allergy Community Program*** aims to assess the food allergy knowledge in airlines staff, restaurants personnel and school community to direct action measures and guidelines, and to evaluate the impact of a web-based training program, whose results and dissemination may have an important socioeconomic impact in different community sectors and in patient's safety and quality of life. Cooperation with national and European authorities would be crucial to obtain data on a larger scale, as well as to standardize recommendations at a European level and to create innovative and easily disseminated learning tools for all Member States.

5. MS organisation(s) involved:

Member State: Portugal

Competent organization: Faculty of Nutrition and Food Sciences, University of Porto, Porto

Contact person: Renata Barros, Nutritionist, PhD

Email: renatabarros@fcna.up.pt

Contact person: Inês Pádua, Nutritionist, PhD student

Email: inespadua@fcna.up.pt

Competent organization: Portuguese Economic and Food Safety Authority (ASAE), Lisbon, Portugal

Contact person: Filipa Melo de Vasconcelos

Email: fmvasconcelos@asae.pt

Competent organization: Immunology, Faculty of Medicine, University of Porto, and Immunoallergology , Centro Hospitalar São João, Porto, Portugal

Contact person: André Moreira, MD, PhD

Email: andremoreira@med.up.pt

6. Project planning timeline:

Start: 2016 – 2018 (PhD Research Project ongoing)

Duration Months: 36

7. **Main Keys:** Capacity Building and Developing Technical Skills; Testing the efficacy of a web-based training intervention; Enhancing knowledge and community confidence in dealing with food allergy; Strengthening Cooperation with counterparts.

8. Link to related documents (if any):

Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers. Available at http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32011R1169

Portuguese National Decree No. 26/2016 of 09 June 2016 that ensures enforcement and guarantees compliance, in the internal legal order, with the obligations arising from Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011. Available at https://dre.pt/application/conteudo/74661197

Pádua, I. Moreira, A. Moreira, P. Barros, R. Food Allergy: practical approach on education and accidental exposure prevention. Eur Ann Allergy Clin Immunol. 2016;48(5): 174-181. Available at http://www.eurannallergyimm.com/cont/journals-articles/439/volume-food-allergy-practical-approach-education.asp

Portuguese Educational Books for Food Allergy in School and in Restaurants, promoted by Portuguese General Directorate of Health and Portuguese General Directorate of Education:

Nunes, M. Barros, R. Moreira, P. Moreira, A. Morais-Almeida, M. Alergia alimentar. Direção Geral de Saúde e Direção Geral da Educação. 2012. Available at http://www.dgs.pt/documentos-e-publicacoes/alergias-alimentares.aspx.

Pádua, I. Barros, R. Moreira, A. Moreira, P. Alergia Alimentar na Restauração. Direção-Geral da Saúde. 2016. Available at http://www.alimentacaosaudavel.dgs.pt/activeapp/wp-content/files_mf/1464873118AlergiaAlimentarnaRestaurac%CC%A7a%CC%83o.pdf.

Template for first joint projects ideas under the EU RAA

1. **Country: PT 15**

   Portugal (15)

2. **Project title:**

Risk assessment of exposure to multiple mycotoxins (mixture of aflatoxins and ochratoxin A and mixture of deoxynivalenol and zearalenone) in children and young people

3. **Project link to the Delphi priorities / EFSA Strategy topics:**

   3 - Common data collection/ surveillance scheme

   4 - Multiple contaminant impacts on the risk profile of foods

   10 - Infant and baby food

4. **Project description:**

   Mycotoxins are secondary metabolites produced by fungi. One species can produce several different toxins and one mycotoxin can be produced by different species. Thus, if a food is contaminated with a fungus and if the production of mycotoxins is carried out, there are several different toxins along which consumers will be exposed.

   It should be noted that, according to the International Agency for Research on Cancer, aflatoxins (AFs) are in category 1 (carcinogenic to humans), whereas ochratoxin a (OTA) is in 2B (possible carcinogen for men). Deoxynivalenol (DON) and zearalenone (ZEA) are included in category 3 as not being classified as carcinogenic to humans.

   Studies are need on exposure and toxic effects of these mixtures, especially on most susceptible population, since that the mixture of AFs with OTA causes synergism effect, whereas mixture of DON with ZEA seems to provoke an additive effect.

   It ubiquitous occurrence results in an unavoidable and likely human exposure, especially through the consumption of contaminated food. The European population is exposed to these mixtures, especially AFs and OTA. Proof of this is the alerts in the Food and Food Safety Alerts Portal in recent years.

Therefore, the exposure of several food contaminants has been drawing attention from the scientific community and the European Food Safety Authority.

Simultaneous exposures to AFs and OTA and to DON and ZEA have not yet been studied in Portugal and therefore studies are needed to characterize their risk.

The objective of this study is to evaluate the exposure of the infant population to two mixtures of mycotoxins: a) mixture of AFs and OTA and b) mixture of DON and ZEA.

This project also takes into account the EFSA Strategy 2020, namely promoting data collaborative opportunity to arouse new knowledge and applications of scientific data and Working with data providers to promote a culture of openness and sharing.

5. **MS organisation(s) involved:**

Autoridade de Segurança Alimentar e Económica (ASAE)

Maria Manuel Mendes (ASAE), maria.mendes@asae.pt

Mafalda Costa (ASAE), amcosta@asae.pt

Faculdade de Farmácia da Universidade de Lisboa (FF)

Maria Luísa Mateus (FF), lmateus@ff.ulisboa.pt

Bárbara Taborda (FF), barbarainacio@campus.ul.pt

6. **Project planning timeline:**

In 1 (one) year:

- Characterize the sampling method;
- Analyze the occurrence data of the ASAE for 2016 and previous years;
- Check what types of food are missing analyze and do it;
- Assess the exposure of said mixtures.

7. **Main Keys:** exposure to chemical mixtures, aflatoxins, ochratoxin a, deoxynivalenol, zearalenone, children, young people, Portugal

8. **Link to related documents (if any):**

Bennett, J. W., & Klich, M. (2003). Mycotoxins. *Clinical Microbiology Reviews*, *16*(3), 497–516. http://doi.org/10.1128/CMR.16.3.497

Bensassi, F., Gallerne, C., Dein, O. S. el, Hajlaoui, M. R., Lemaire, C., & Bacha, H. (2014). In vitro investigation of toxicological interactions between the fusariotoxins deoxynivalenol and zearalenone. *Toxicon*, *84*. http://doi.org/10.1016/j.toxicon.2014.03.005

European Food Safety Authority. (2006). Opinion of the Scientific Panel on Contaminants in the Food Chain Related to Ochratoxin A in Food. *The EFSA Journal*, *365*, 1–56. http://doi.org/10.2903/j.efsa.2006.365

Food and Agriculture Organization of the United Nations. Managing aflatoxin in groundnut (2003). Retrieved from http://www.fao.org/docs/eims/upload/agrotech/1999/aflatoxin-flyer-en.pdf

Food and Feed Safety Alerts. (2015). RASFF Portal. Retrieved October 2, 2016, from https://webgate.ec.europa.eu/rasff-window/portal/?event=searchResultList

International Agency for Research on Cancer. (2016). Agents Classified by the IARC Monographs. Retrieved October 2, 2016, from https://monographs.iarc.fr/ENG/Classification/ClassificationsAlphaOrder.pdf

M., Š. K. (2012). Adverse effects of combined mycotoxins. *Archives of Industrial Hygiene and Toxicology*, *63*(4), 519–530. http://doi.org/10.2478/10004-1254-63-2012-2299

Smith, M. C., Madec, S., Coton, E., & Hymery, N. (2016). Natural Co-occurrence of Mycotoxins in Foods and Feeds and Their in vitro Combined Toxicological Effects. *Toxins*, *8*(94). http://doi.org/10.3390/toxins8040094

Yazar, S., & Omurtag, G. Z. (2008). Fumonisins, Trichothecenes and Zearalenone in Cereals. *International Journal of Molecular Sciences*, *9*(11), 2062–2090. http://doi.org/10.3390/ijms9112062

Template for first joint projects ideas under the EU RAA

1. **Country:**
   Portugal (16)

2. **Project title: PT16**

Risk benefit assessment of food fortification and dietary supplement intake

3. **Project link to the Delphi priorities / EFSA Strategy topics**
   2. Development of standard risk-benefit assessment methods (of foods)
   3. Common data collection/ surveillance scheme
   5. Risks/benefits of botanicals/ herbals in food supplement
   27. Food supplements risk/benefits (in general).

4. **Project description:**
   Due to increasing availability and marketing of food (dietary) supplements, functional and fortified foods, risk benefit assessment applied to micronutrients, and other bioactives, is a challenging process because there is a need to balance the health benefits of reducing inadequate intakes against health risks of excessive intakes in different population groups.
   During the risk benefit assessment process, robust exposure assessment to micronutrients allows to build efficient risk benefit management and communication approaches, namely, regarding mandatory and voluntary food fortification practices, and maximum (and minimum) permitted levels on food supplements.
   Micronutrient exposure assessments combine detailed food consumption data with data on the concentration of micronutrients in general foods, but specially fortified foods and supplements. The resulting dietary exposure estimates are then compared with the relevant toxicological or nutritional reference value for micronutrients.
   In this project detailed individual food and supplements consumption data obtained, applying the general principles for the collection of national food consumption data recommended by EFSA (The National Food, Nutrition and Physical Activity Survey, www.ian-af.pt) will be combined with concentration of micronutrients in foods and supplements available in extended food-composition tables.

5. **MS organisation(s) involved:**
   Faculty of Nutrition and Food Sciences of the University of Porto (FCNAUP);
   i3S – Institute for Research and Innovation in Health;
   Faculty of Medicine of the University of Porto (FMUP);
   Institute of Public Health of the University of Porto (ISPUP)
   National Health Institute Doutor Ricardo Jorge (INSA)

Duarte Torres (FCNAUP/i3S/ISPUP), dupamato@fcna.up.pt
Carla Lopes (FMUP/ISPUP), carlal@med.up.pt
Luisa Oliveira (INSA), Luisa.Oliveira@insa.min-saude.pt
Maria da Graça Dias (INSA), M.Graca.Dias@insa.min-saude.pt

6. **Project planning timeline:**
   To be defined
7. **Link to related documents (if any):**

- Tijhuis MJ, et al. State of the art in benefit–risk analysis: Food and nutrition Food and Chemical Toxicology 2012; 50, 5–25. http://dx.doi.org/10.1016/j.fct.2011.06.007
- European Food Safety Authority, 2014. Guidance on the EU Menu methodology. EFSA Journal 2014;12(12):3944, 77 pp. doi:10.2903/j.efsa.2014.3944

Template for first joint projects ideas under the EU RAA

1. **Country:**
   Portugal (17)

2. **Project title: PT 17**

Urinary metabolomic profile – a path to discover novel biomarkers of dietary exposure

3. **Project link to the Delphi priorities / EFSA Strategy topics**
   3. Common data collection/ surveillance scheme
   26. Developing standard biomarkers of intake of and/or exposure to contaminants.

4. **Project description:**
   Dietary exposure assessment is considered one of the biggest challenges in health-related research. Conventional methods of measuring dietary exposure, such as 24-h dietary recalls and food-frequency questionnaires, depend on estimates of food intake and are subject to errors. Furthermore, the estimation of energy, nutrients and other food constituents' intake relies on the existence of appropriate and reliable food composition tables and the detailed and systematic description of consumed foods (production method, preservation method, packaging material, brand, cooking method and degree of doneness…).
   This research project aims to examine the association between exposure to food-derived factors (nutrients, hazardous chemicals and phytochemicals) and urinary metabolomic profiles in free-living individuals. This quantitative screening of metabolites can facilitate the monitoring of food consumption in future epidemiological or dietary intervention studies, replacing or supporting the use of conventional dietary questionnaires. In addition, the development of rapid and inexpensive assays for biomarkers of food intake could be used to routinely assess dietary deficiencies and unbalances in large population cohort studies and dietary surveys
   This project will be nested on the National Food, Nutrition and Physical Activity Survey, www.ian-af.pt, a larger cross-sectional population-based study, where detailed individual food and supplements consumption data was obtained applying the general principles for the collection of national food consumption data recommended by EFSA. On the scope of the survey a subsample of 150 individuals was selected to collect 24h urine samples.
   We expect: 1) to examine the link between dietary patterns (including food constituents and food supplements), assessed by dietary assessment short and long term methods (24-h recall and FPQ, respectively), and urinary metabolomic profile; 2) to investigate the link between exposure to potentially toxic food derived compounds and urinary metabolomic profile;3) to assess the exposure to polyphenol dietary sources, through extended food-composition tables and using urinary polyphenol metabolome.

5. **MS organisation(s) involved:**
   Faculty of Nutrition and Food Sciences of the University of Porto (FCNAUP); i3S – Institute for Research and Innovation in Health

   Faculty of Medicine of the University of Porto (FMUP); Institute of Public Health of the

University of Porto (ISPUP)
National Health Institute Doutor Ricardo Jorge (INSA)

Duarte Torres (FCNAUP/i3S/ISPUP), dupamato@fcna.up.pt
Carla Lopes (FMUP/ISPUP), carlal@med.up.pt
Luisa Oliveira (INSA), Luisa.Oliveira@insa.min-saude.pt
Maria da Graça Dias (INSA), M.Graca.Dias@insa.min-saude.pt

6. **Project planning timeline:**
To be defined

7. **Link to related documents (if any):**
   - Fave G, et al. Measurement of dietary exposure: a challenging problem which may be overcome thanks to metabolomics? Genes Nutr. 2009;4(2):135-41.
   - Fave G, et al. Development and validation of a standardized protocol to monitor human dietary exposure by metabolite fingerprinting of urine samples. Metabolomics. 2011;7(4):469-84.
   - European Food Safety Authority, 2014. Guidance on the EU Menu methodology. EFSA Journal 2014;12(12):3944, 77 pp. doi:10.2903/j.efsa.2014.3944

Template for first joint projects ideas under the EU RAA

1. **Country:**

Slovak Republic

2. **Project title:**

The spread of harmful organisms in terms of human and animal health

3. **Project link to the Delphi priorities / EFSA Strategy topics**

Add reference to the Delphi priority topic listed in the Annex B of the EU RAA paper and/or EFSA Strategy topics (particularly the objective under the heading 'Prepare for future risk assessment challenges').
The EU RAA paper is accessible on the DMS here:
https://dms.efsa.europa.eu/otcs/cs.exe?func=ll&objaction=overview&objid=15782409

Environmental priorities - 19. Improving information on the occurrence and spread of harmful organisms

and the EFSA Strategy can be found on the EFSA Web site here :
http://www.efsa.europa.eu/sites/default/files/corporate_publications/files/strategy2020.pdf

Processes and a toolbox for emerging risks identification and crisis preparedness

4. **Project description:**

In the context of the climate change, globalization and the increasing number of cats and dogs in cities, including stray animals, as well as the ascending trend of traveling with animals to other countries, the risk to human and animal health caused by pathogenic organisms and the expansion of vectors carrying different infection cumulates. In Slovakia a spread of vectors that did not occur previously in our territory, or were present only in areas at lower altitude has been observed. Due to the effect of global warming the numbers of vectors such as ticks, mosquitoes and Ceratopogonidae rise also in the areas at higher altitude. Mild weather leads to the expansion of vectors and consequently to human and animal exposure to the risk from tick-borne encephalitis, West Nile Fever virus, Lyme boreliosis, babesiosis, etc. Besides the spread of vector-borne diseases, in recent years there is an expansion of parasites from endemic areas to the whole territory of Slovakia, for example the spread of *Echinococcus* tapeworm, which is observed not only in Slovakia but also in Europe. At the same time due to intensified migration of the population, mostly without prior vaccination, from southern countries to the European Union increases the risk of introducing diseases that has not occurred in our country for decades, such as WNF or malaria.

5. MS organisation(s) involved:

State Veterinary and Food Institute – Veterinary and Food Institute Bratislava
Assoc. Prof. Slavomír Marcinčák, DVM, PhD. riaditel@svpu.sk
Alexandra Šlezárová, DVM aslezarova@svuba.sk
Daniela Valentová, MSc. valentova@svuba.sk

University of Veterinary Medicine and Pharmacy in Košice
Assoc. Prof. Anna Ondrejková, DVM, PhD. anna.ondrejkova@uvlf.sk
Assoc. Prof. Alica Kočišová, DVM, PhD. alica.kocisova@uvlf.sk

Institute of Parasitology Slovak Academy of Sciences
Zuzana Hurníková, DVM, PhD. hurnikz@saske.sk
Assoc. Prof. Branislav Peťko, DVM, D.Sc. petko@saske.sk

6. Project planning timeline:

First Phase of the project 2016 -2017 will be focused on:

1. The trends of spreading the vectors in Slovakia
   a) new species that spread in the area of the Slovak Republic
   b) the spread of indigenous vectors to areas at higher altitude

2. Risk of vector-borne diseases
   – diseases, which are not detected in Slovakia but are present in neighboring countries, and the possibility of their introduction into Slovakia (i.e. WNF, Bluetongue disease, Lumpy skin disease, malaria, etc.)
   –intrusion of vector-borne diseases into areas at high altitude
   – diseases with increasing prevalence (e.g. LB, TBE, Q fever, dirofilariosis etc.)

3. Parasites and their spread in Slovakia (i.e. *Echinococcus* spp., *Dirofilaria* spp., *Trichinella* spp. etc.)

Second Phase of the project 2017 – 2020. Project is expected to be extended to other Central European countries - Austria, Hungary and the Czech Republic.

7. Link to related documents (if any):

National risk assessment

Title of the document	Link
Risk assessment of animal health in connection with the spread of new vectors and pathogens	http://www.mpsr.sk/index.php?navID=75&id=5122
Risk assessment of American foulbrood in Slovak Republic	www.mpsr.sk/download.php?fID=6596
African Swine Fever – Risk Assessment for the Slovak Republic	www.mpsr.sk/download.php?fID=5116

The risk of bee diseases in Slovakia and the possibility of risk to bee products	http://www.mpsr.sk/sk/index.php?navID=525&navID2=525&sID=111&id=8049
Catarrhal fever Bluetongue - risk assessment in Slovak Republic	www.mpsr.sk/download.php?fID=5118
Risk assessment of Varroa mite (Varroa destructor) in Slovak Republic	www.mpsr.sk/download.php?fID=6595
Risk assessment of alveolar echinococcosis in humans and animals in SR	www.mpsr.sk/download.php?fID=7659
Risk assessment for distribution of Exotic diseases of bees - Small hive beetle (*Aethina tumida*) and parasite Tropilaelaps (*Tropilaelaps* spp.) in Slovak republic from Third countries	www.mpsr.sk/download.php?fID=8798
Risk assessment of pathogen bacteria presence in raw milk	www.mpsr.sk/download.php?fID=7791
Risk assessment of infestation of nosematosis of bees - Nosema apis a Nosema ceranae in Slovak Republic	www.mpsr.sk/download.php?fID=9917
Risk assessment of cestode infections in actual conditions of the Slovak Republic	www.mpsr.sk/download.php?fID=9916

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Template for first joint projects ideas under the EU RAA

1. **Country:**

Slovenia

2. **Project title:**

Environmental risks to groundwater ecosystems related to use of feed additives

3. **Project link to the Delphi priorities / EFSA Strategy topics**

22. The impact of chemicals on the ecosystem (release of chemicals into the environment)

4. **Project description:**

In the EU, groundwater (GW) is the most important source of drinking water. GW is as well an ecosystem that is often burdened with intensive agriculture, urbanisation, infrastructure and industry. Feed additives present in the manure can pose a risk for the GW ecosystems when spread onto the grassland or arable land. Probably the most representative GW habitats in EU are in karst (fractures, channels, caves) and in alluvial gravel interstitial spaces. The impact of feed additives to the GW ecosystems, particularly coccidiostats, histomonostats and heavy metals such as zinc and copper is not known.

The current EU guidelines for the environmental risk assessment of feed additives in GW suggest an approach based on the threshold concentration of 0.1 µg/L. The latter is the upper limit of the concentration of pesticides in groundwater in the EU. It is assumed that the concentration of 0.1 µg/L is by default safe for both humans and exposed GW organisms. However, there is increasing evidence that the vulnerability of GW ecosystems can be much higher than previously thought. Largely unrecognised biodiversity in GW habitats is worthy of protection through the adoption of a scientifically sound risk analysis and the adoption of risk mitigation measures.

The aim of the project is to perform a deterministic assessment of risk for groundwater ecosystems related to use of selected active substances as feed additives. The risk assessment would base on the field study from the exposed locations in different EU member states. The study will tend to evaluate presence of active substances or their degradation products in relation to the use (veterinary medicine, feed additive) and origin (agriculture, other sources).

Data obtained will be used to protect of GW ecosystems and in the support of the probabilistic assessment of fate and exposure of different groups of feed additives.

5. MS organisation(s) involved:

As leading party:
National Laboratory for Health, Environment and Food; Prvomajska 1, SI-2000 Maribor, Slovenia (contact person: Boris Kolar; e-mail:boris.kolar@nlzoh.si)
Potential partner organisations at national or EU level:
University of Nova Gorica, Vipavska 13, Rožna Dolina, SI-5000 Nova Gorica, Slovenia
Veterinary Faculty, University of Ljubljana, Gerbičeva 60, SI-1000 Ljubljana, Slovenia

6. Project planning timeline:

4 years.

7. Link to related documents (if any):

Template for first joint projects ideas under the EU RAA

1. **Country:** SLOVENIA (2)

2. **Project title:**

Emerging Contaminants in the Adriatic Sea

3. **Project link to the Delphi priorities / EFSA Strategy topics**

11. Emerging contaminants

4. **Project description:**

Emerging contaminants (ECs) are synthetic or naturally occurring chemicals or microorganisms that have recently been shown to occur widely in the environment have a potential to pose risk to environment and human health. Not enough adequate data exists to determine the risk. Therefore the risk of ECs to the environment and human health is often not mitigated. ECs includes human and veterinary medicines, nanomaterials, personal care products, paints and coatings natural toxins and degradation products of man-made chemicals, natural toxins, microorganisms, genes.

Overall project objective:

- Reduction of risk of ECs in order of protection, improvement and cross border monitoring of the inland surface waters, marine environment and natural resource.

Specific objectives:

- Identification of ECs hot spots in the Adriatic Sea and tributaries
- Study on ECs in sediment of inland waters, remote habitats (deep sea), the estuarine habitats, municipal waters and selected vulnerable habitats and biota.
- Evaluate data and assess the risk in the relation of presence of ECs for marine environment and human health.

5. **MS organisation(s) involved:**

As leading party:

National Laboratory for Health, Environment and Food; Prvomajska 1, 2000 Maribor, Slovenia (contact person: Boris Kolar; e-mail: boris.kolar@nlzoh.si).
Potential partner organisations at national or EU level:
University of Nova Gorica, Vipavska 13, Rožna Dolina, SI-5000 Nova Gorica, Slovenia

6. Project planning timeline:

4 years

7. Link to related documents (if any):

Template for first joint projects ideas under the EU RAA

1. **Country: SLOVENIA** (3)

2. **Project title:**

Determination and exposure assessment of bisphenols and related compounds in foods and beverages migrated from contact packaging materials.

3. **Project link to the Delphi priorities / EFSA Strategy topics**

Topic 11: Emerging contaminants

4. **Project description:**

The migration of Bispenols, the endocrine disrupting compounds, from food contact materials (FCM), represents a global health problem, since the human population is daily exposed to them. E.g. Bisphenol A (BPA) being a monomer is used in the production of polycarbonate (PC) plastics, which are widely used as FMCs as well as in the production of epoxy based lacquers employed as linins in cans, bottle tops and lids preventing direct contact of foods and beverages with metals. Recently the safe level (tolerable daily intake – TDI) was reduced from 50 to 4 ug kg bw-1 day-1(**1**). The European Union has also prohibited its production in baby bottles (**2**), and set a specific migration limit (SML) of 0.6 ug g-1 from any FCM into food. This has led to BPA-free products containing BPA analogues (chemically similar compounds) and are currently under surveillance for endocrine disrupting potential. Despite the fact that SMLs have been established in Commission Regulation (EU) No. 10/2011 for bisphenol S (BPS, 0.05 ug g-1), 4-cumylphenol (HHP, 0.05 ug g-1), and 2,4-dihydroxybenzophenone (DHBP, 60 ug g-1), the risk to public health have been assessed only for BPA exposure. Even though, that the **toxic BPA analogues** (e.g. BPAF, BPAP, BPF, BPZ,…) have become **new emerging contaminants** by replacing BPA, research dedicated to their determination and migration studies, has been recently attracted only by scientific community.
Aim: method development for determination of BPA analogues in various foods and beverages, study their migration behaviour and finally assess human exposure to them.

5. **MS organisation(s) involved:**

National Laboratory for Health, Environment and Food; Vipavska 13, 5000 Nova Gorica, Slovenia (contact person: Mitja Martelanc; e-mail: mitja.martelanc@nlzoh.si).

6. **Project planning timeline:**

Suggested start date: July 2017; Duration: 4 years.

7. Link to related documents (if any)

(**1**) EFSA Panel on Food Contact Materials, Scientific Opinion on the risks to public health related to the presence of bisphenol A (BPA) in food stuffs. In EFSA J. 2015, 13 (1) 397810.2903/j.efsa.2015.3978.

(**2**) European Commission Regulation (EU) No 321/2011 of 1 April 2011 amending Regulation (EU) No 10/2011 as regards the restriction of use of Bisphenol A in plastic infant feeding bottles Text with EEA relevance.
http://eur-lex.europa.eu/legal-content/EN/ ALL/?uri=CELEX%3A32011R0321 (accessed April 12, 2016).

Template for first joint projects ideas under the EU RAA

1. **Country:** SLOVENIA (4)

2. **Project title:**

Citizen-based monitoring for early detection of alien plant pest introductions

3. **Project link to the Delphi priorities / EFSA Strategy topics**

19. Improving information on the occurrence and spread of harmful organisms

4. **Project description:**

Quarantine pests and diseases are known to have huge impact on forestry and agricultures. Therefore, it is important to avoid or stop spread as soon as possible the species is found in the country. Citizen Science can be an effective approach for collecting data, and an effective channel to raise awareness of wide public about impacts of alien plant pests. Citizen science, also known as crowd science, crowd-sourced science, civic science, volunteer monitoring or networked science, is scientific research conducted, in whole or in part, by amateur or nonprofessional scientists. Citizen science is sometimes described as "public participation in scientific research", participatory monitoring and participatory action research. The civil society (citizen scientists) can contribute to collecting data on quarantine plant pests, but some basic training/awareness campaign needs to be performed to encourage the involvement of society.
Due to higher propagule pressure and milder climate, alien species often first establish in urban environments, which are at the same time less under the attention of biological monitoring. Technological advances in mobile devices and their availability make it much easier to engage citizen scientists. Collecting data is faster and can also be made attractive to younger target audiences. Data submitted with geotagged images can be easily verified by an expert, which improves the reliability of datasets.
The main aim is to contribute to an efficient early warning system to reduce the harmful impacts of alien plant pest by using citizen science.
For the early warning system, a network of citizen observers will be developed and citizens will be trained in recognition of quarantine species. Tools helping the identification of quarantine species and supporting collection of data will be developed.

5. **MS organisation(s) involved:**

Slovenian Forestry Institute, Večna pot 2, 1000 Ljubljana, maarten.degroot@gozdis.si

6. **Project planning timeline:**

3 years

7. Link to related documents (if any):

http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5829

Template for first joint projects ideas under the EU RAA

1. **Country:** SLOVENIA (5)

2. **Project title:**

Determination of contaminants PAHs of exogenous and endogenous sources in edible oils with the connection to their geographical and botanical authenticity

3. **Project link to the Delphi priorities / EFSA Strategy topics**

23. Presence/detection of environmental contaminants in food (e.g. from agricultural, industrial or household sources)

4. **Project description:**

Pumpkin seed oil is a traditional product of central Europe including Slovenia, Hungary, Croatia, Austria and part of Germany.
In the process of production hulled pumpkin seeds are dried, roasted and then pressed into oil. This natural edible oil is obtained by production process that includes a roasting step but no refining of the product at the end.
During roasting, pumpkin seeds are exposed to temperatures above 100 ºC for up to 60 minutes. High temperatures can lead to formation of polycyclic aromatic hydrocarbons (PAHs). With high temperature, organic compounds decompose to smaller, more reactive parts, mostly radicals, which can transform into stable PAHs. Many PAHs have genotoxic and cancerogenic effects, some work as synergists. Due to their lipophilic nature, fats and lipids present main source of PAHs in the diet.
There are different possibilities for contamination of pumpkin seed oil with PAHs. High temperatures used during drying and roasting process were already mentioned. Other important reason can be exogenous contamination during seed drying process, if open fire for production of drying air is used. High PAH contents were found also when plants are exposed to industrial and vehicular emissions.
The origin can therefore be important information in the process of risk assessment regarding the occurrence of PAHs in oils and can be connected with the geographical origin and the environmental influence. According to the literature data the most appropriate methodology for determination of geographical origin seems to be the analysis of stable isotopes ratios of fatty acids in combination with multivariate statistics for which data bank of standard samples should be used.

Appropriate
methodology for monitoring the PAHs in oils should be harmonised between MS together with the harmonisation of methodology for determination of stable isotopes ratios and establishment of data bank is necessary for unambiguous determination of geographical origin.

5. MS organisation(s) involved:

- Slovenian Institute of Hop Research and Brewing
  Cesta Žalskega tabora 2
  SI-3310 Žalec
  Phone: + 386 3 7121600
  Fax: + 386 3 7121620
  Email: tajnistvo@ihps.si

  Contact person:
  Iztok Jože Košir
  Phone: + 386 3 7121608
  Fax: + 386 3 7121620
  Email: iztok.kosir@ihps.si

- Jožef Stefan Institute, Jamova cesta 39, 1000 Ljubljana

6. Project planning timeline:

Three years from the beginning.

7. Link to related documents (if any):

1. POTOČNIK, Tanja, KOŠIR, Iztok Jože. Influence of roasting temperature of pumpkin seed on PAH and aroma formation. *European Journal of Lipid Science and Technology*, ISSN 1438-9312. [Online ed.], 2016, doi: 10.1002/ejlt.201500593.

2. POTOČNIK, Tanja, OGRINC, Nives, POTOČNIK, Doris, KOŠIR, Iztok Jože. Fatty acid composition and [delta][sub](13)C isotopic ratio characterisation of pumpkin seed oil. *Journal of food composition and analysis*, ISSN 0889-1575, 2016, vol. 53, str. 85-90, doi: 10.1016/j.jfca.2016.09.005.

Template for first joint projects ideas under the EU RAA

1. **Country: SLOVENIA** (6)

2. **Project title:**

Exposure of bumblebees and other wild pollinators to pesticides in spraying in the early morning and evening

3. **Project link to the Delphi priorities / EFSA Strategy topics**

Topic 22: The impact of chemicals on the ecosystem (release of chemicals into the environment)

4. **Project description:**

The majority of European crops benefit, at least in part, from insect pollination. An estimated 10 % of the total economic value of European agricultural output for human food amounted to 22 billion EUR is depended upon insect pollination.
The function of pollination is being carried out by the always-in-focus honey bees and multitude of often overlooked wild pollinators, which are in some cases even more efficient than honeybee. Stable production is therefore tightly interleaved with biodiversity of pollinators. The most important among the wild pollinators are wild bees.
Similarly to honeybee, one of the main threat for bumblebees and other wild pollinators are pesticides. One of widely used action to reduce direct exposure of honeybee to pesticides is spraying in the early morning or evening. This is the time when the bumblebees are most active.
Main goals of the proposed project are (1) to evaluate activity of wild pollinators in the early morning and evening (2) to estimate the adequacy of current spraying praxis and (3) to prepare suggestions how to reduce direct exposure to pesticides of all pollinators.

5. **MS organisation(s) involved:**

- National Institute of Biology, Večna pot 111, 1000 Ljubljana, Slovenia (lead), email: danilo.bevk@nib.si
- Agricultural Institute of Slovenia, Hacquetova ulica 17, 1000 Ljubljana, Slovenia
- National Laboratory for Health, Environment and Food; Prvomajska 1, 2000 Maribor, Slovenia
- Slovenian institute of Hop Research and Brewing, Cesta Žalskega tabora 2, 3310 Žalec, Slovenia

6. **Project planning timeline:**

ASP, 3 years

7. Link to related documents (if any):

European Food Safety Authority, 2013. EFSA Guidance Document on the risk assessment of plant protection products on bees (*Apis mellifera*, *Bombus* spp. and solitary bees). EFSA Journal 2013;11(7):3295, 266 pp. (http://www.izslt.it/apicoltura/wp-content/uploads/2013/07/EFSA_Guidance.pdf)

Garibaldi, L. A, Steffan-Dewenter, I., Winfree, R., Aizen, M.A., Bommarco, R., Cunningham, S.A., Kremen, C., Carvalheiro, L.G., Harder, L.D., Afik, O., Bartomeus, I., Benjamin, F., Boreux, V., Cariveau, D., Chacoff, N.P., Dudenhöffer, J.H., Freitas, B.M., Ghazoul, J., Greenleaf, S., Hipólito, J., Holzschuh, A., Howlett, B., Isaacs, R., Javorek, S.K., Kennedy, C.M., Krewenka, K.M., Krishnan, S., Mandelik, Y., Mayfield, M.M., Motzke, I., Munyuli, M., Nault, B.A., Otieno, M., Petersen, J., Pisanty, G., Potts, S.G., Rader, R., Ricketts, T.H., Rundlöf, M, Seymour, C.L., Schüepp, C., Szentgyörgyi, H., Taki, H., Tscharntke, T., Vergara, C.H., Viana, B.F, Wanger, T.C., Westphal, C., Williams, N., Klein A.M. (2013) Wild Pollinators Enhance Fruit Set of Crops Regardless of Honey Bee Abundance. Science, 339: 1608-1611.

Goulson, D. (2012) Bumblebees: behaviour, ecology and conservation. Oxford, Oxford university press, 317 pp.

Nieto, A, Roberts, S.P.M., Kemp, J., Rasmont, P., Kuhlmann, M., Criado, M.G, Biesmeijer, J.C., Bogusch, P., Dathe, H.H., De la Rúa, P., De Meulemeester, T., Dehon, M., Dewulf, A., Ortiz-Sánchez, F.J., Lhomme, P., Pauly, A., Potts, S.G., Praz, C., Quaranta, M., Radchenko, V.G., Scheuchl, E., Smit, J., Straka, J., Terzo, T., Tomozii, B., Window, J., Michez, D. (2014) European red list of bees. Luxembourg: Publication Office of the European Union. 84 str. (http://ec.europa.eu/environment/nature/conservation/species/redlist/downloads/European_bees.pdf)

Potts, S., Biesmeijer, K., Bommarco, R., Breeze, T., Carvalheiro, L., Franzen, M., Gonzalez-Varo, J.P., Holzschuh, A., Kleijn, D., Klein, A.-M., Kunin, B., Lecocq T., Lundin, O., Michez, D., Neumann, P., Nieto, A., Penev, L., Rasmont, P., Ratamaki, O., Riedinger, V., Roberts, S.P.M., Rundlof, M., Scheper, J., Sorensen, P., Steffan-Dewenter I., Stoev, P., Vila, M., Schweiger O. (2015) Status and trends of European pollinators. Pensoft Publishers, Sofia, 72 pp. (http://step-project.net/img/uplf/STEP%20brochure%20online-1.pdf)

Template for first joint projects ideas under the EU RAA

1. **Country:** SLOVENIA (7)

2. **Project title:**

   The safety of hemp in food and food supplements

3. **Project link to the Delphi priorities / EFSA Strategy topics**

(5) Risk/benefits of botanicals/herbals in food supplements
(11) Emerging contaminants

4. **Project description:**

Foods containing or made entirely of various components of hemp may still contain trace amounts of THC, and more than sixty other cannabinoids, some of them are biologically active eg. cannabidiol (CBD), cannabinol (CBN). Their content in the final product can be substantially increased by the contamination at harvest and storage procedures and in the concentration steps or extraction. The aims of the proposed project are:
- to evaluate the availability of hemp in conventional foods and food supplements on the European market;
- to use an appropriate analytical techniques and methods to determine the content of biologically active cannabinoids THC, CBD and CBN and possible other cannabinoids;
- to calculate exposures and to assess the risk/benefits of biologically active cannabinoids in food and food supplements.

5. **MS organisation(s) involved:**

- National Institute of Public Health Slovenia (info@nijz.si), contact person: Urška Blaznik; e-mail: urska.blaznik@nijz.si;
- The National Laboratory of Health, Environment and Food (info@nlzoh.si);
- Nutrition Institute (info@nutris.org).

6. **Project planning timeline:**
   TBD

7. **Link to related documents (if any):**
- EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP); Scientific Opinion on the safety of hemp (*Cannabis genus*) for use as animal feed. EFSA Journal 2011;9(3):2011. [41 pp.]

Template for first joint projects ideas under the EU RAA

1. **Country: SLOVENIA** (8)

2. **Project title:**

Risk assessment of bacterial adhesion on food contact surfaces

3. **Project link to the Delphi priorities / EFSA Strategy topics**

23. Presence/detection of environmental contaminants in food (e.g. from agricultural, industrial or household sources)

4. **Project description:**

In this project, we will consider the adhesion of bacteria on different food contact surfaces. First, the contact surfaces will be characterized by measuring their roughness, surface potential and hydrophobicity. Second, we will determine the surface charge density of bacteria and hydrophobicity. At the end we will determine will the extent of adhered bacteria onto the material surface. The standard crystal violet and SEM technique will be used. Depending on the surface properties, we will elucidate the reasons for the bacterial adhesion.

In the second part of our project, we will assess the impact of environmental factors characteristic for food production/processing on bacterial adhesion on food contact surfaces: physical/chemical parameters (e.g. T, pH, O_2, food remains and microbial contaminants (co-aggregation, mixed culture adhesion) and study the capacity of bacteria to adhere to the contact surfaces. Here we will also concentrate how different types of light influence the bacterial adhesion to food contact surfaces.

The third part of the project we will search for optimal conditions for biofilm and biofilm-like structure formation in natural conditions. The influence of liquid flow on bacterial removal will be applied. Hurdle application of selected approaches for treatment of microbial cells and material contact surfaces to achieve optimal decontamination efficiency will be used.

5. **MS organisation(s) involved:**
   - University of Ljubljana, Faculty of Health Studies (contact person: Klemen Bohinc; e-mail: bohinck@zf.uni-lj.si);
   - University of Ljubljana: Veterinary Faculty, Biotechnical Faculty;
   - Institute for Hop Research and Brewing, Žalec;
   - National Institute of Chemistry, Ljubljana.

6. Project planning timeline:

The project will start in 2017 and the duration will be two years.

7. Link to related documents (if any):

Template for first joint projects ideas under the EU RAA

1. **Country: SLOVENIA** (9)

2. **Project title:**

The Risk assessment of raw food diet – the impact of increased consumption of nuts and dried fruits (containing aflatoxins) on health

3. **Project link to the Delphi priorities / EFSA Strategy topics**

4. Multiple contaminant impacts on the risk profile of foods

4. **Project description:**

The project idea follows a medical, chemical and sanitary challenge posed by the so-called raw food diet and its safety. It looks like that the present subject shares different experts' opinions. In the perspective of each discipline, raw food may be enriched with enzymes and could allow us a better digestion, more energy but looking on this diet on a long-term scale, it may lead to some health problems.

Raw food, by definition, is not only a fresh food but also food, which is termised to 48 °C (by Walker). The question that arises here is how safe is this temperature for microorganisms, which are producing aflatoxins and how the pH and other components coming from different food matrices affect the aflatoxins release into the food. Looking from the nutritional point of view, the raw food diet causes certain concern. In fact, the maximal concentrations of aflatoxins are found in the main components of raw food diet: nuts, dried fruits and vegetables.

On the basis of results risk assessment analysis will be performed and the results will serve as a support for implementation of risk minimization measures.

5. **MS organisation(s) involved:**
- University of Ljubljana, Faculty of Health Studies (contact person: Polonca Trebše; e-mail: polonca.trebše@zf.uni-lj.si), Veterinary Faculty;
- The National Laboratory of Health, Environment and Food, Ljubljana.

6. **Project planning timeline:**

The project will start in 2017 and the duration will be two years.

7. **Link to related documents (if any):**

Template for first joint projects ideas under the EU RAA

1. **Country: SLOVENIA** (10)

2. **Project title:**

Quality and safety of urban honey bee products in post-industrial era

3. **Project link to the Delphi priorities / EFSA Strategy topics**

Topic 23: Presence/detection of environmental contaminants in food (e.g. from agricultural, industrial or household sources)

4. **Project description:**

Global situation prompts us to reconsider urban food sources. Their main advantage is nominal absence of pesticides. The drawback however is the presence of high-frequency traffic, which is a source of dust-particles possibly contaminating urban food. Also, the decline of major industrial polluters in EU probably improved the environmental situation in urban centres.

There is a growing trend of urban beekeeping and establishing of *bona-fides* of urban honey bee produce Europe-wide is a must. The project will focus on presence of heavy metals and dust particles in both honey and pollen in comparison with the extensive and intensive rural environments.

5. **MS organisation(s) involved:**

- Agricultural Institute of Slovenia, Hacquetova ulica 17, SI—1000 Ljubljana (lead), email: janez.presern[at]kis.si
- National Institute of Biology, Večna pot 111, SI—1000 Ljubljana
- University of Ljubljana, Veterinary Faculty, Gerbičeva 60, SI-1000 Ljubljana

6. **Project planning timeline:**

start ASAP, duration 3 years.

7. **Link to related documents (if any):**

Porrini et al. 2003. Honey bees and bee products as monitors of the environmental contamination. Apiacta 38: 63 – 70.

Leita, Mulbachova, Cesco, Barbattini, Mondini. 1996. Investigation of the use of honey bees and honey bee products to assess heavy metals contamination. Environmental Monitoring and Assesment: 43(1): 1 – 9.

Template for first joint projects ideas under the EU RAA

1. **Country: SLOVENIA** (11)

2. **Project title:**

Screening of animal origin food supplements to anabolic and stimulant contaminants

3. **Project link to the Delphi priorities / EFSA Strategy topics**

27. Food supplements risk/benefits (in general)

4. **Project description:**

Food supplements, also those of animal origin (egg, milk and whey proteins, meat powder proteins, tissue extracts) are getting evidently important in the human nutrition. Sport active people essentially use different supplements; on the other hand also sport non-active people taking supplements as dietary product to lover the body weight or as substitute for some of daily meals. Based on literature there is evident contamination of food supplements with mostly anabolic substances and stimulants. The main reason of that is poor production practise, or even intentionally adding, because of enhancing desired prescribed effect of defined supplement.
The aim of the proposed project is sampling the food supplements available on market (from hypermarkets to specialised nutrition shops), their classification and finally the analysis of those samples to the presence of any contaminants. Detection of contaminants classified regarding the WADA classification; S1 anabolic agents and S6 stimulants will be detected according to scientific laboratory standards.
Results will define the real status of contamination within food supplements and therefore be useful data for establishing the use recommendation. On the other hand, results could serve as basis for modification or improvements of legislative in that field.

5. **MS organisation(s) involved:**

As leading party: University of Ljubljana, Veterinary Faculty, Gerbiceva 60, 1000 Ljubljana (contact person: Breda Jakovac Strajn; e-mail: Breda.JakovacStrajn@vf.uni-lj.si)
Potential partner organisations at national or EU level: University of Ljubljana, Faculty of Chemistry and Chemical Technology, Večna pot 113, 100 Ljubljana

6. **Project planning timeline:**

Suggested start date 2017, duration 4 years

7. Link to related documents (if any):

K.J.S. De Cock, F.T. Delbeke, P. Van Eenoo, N. Desmet, K. Roels, and P. De Backer. Detection and determination of anabolic steroids in nutritional supplements. J. Pharma Biomed Analysis. 2001: 25: 843–52.

G.J. Wagnera, J.G. Rabkinb and R. Rabkinb. A randomized comparative trial of testosterone and protein supplements for weight loss in HIV1 men. Nutrition Research. 2001; 21: 159–69.

A Bell, K.D. Dorsch, D.R. McCcreary and R. Hovey. A Look at Nutritional Supplement Use in Adolescents. J. Adol Health. 2004; 34: 508–16.

H. Geyer, M.K. Parr, K. Koehler, U. Mareck, W. Schanzer and M. Thevis. Nutritional supplements cross-contaminated and faked with doping substances. J. Mass Spect. 2008; 43: 892–902.

Template for first joint projects ideas under the EU RAA

1. **Country: SLOVENIA** (12)

2. **Project title:**

Increasing honey bee health and quality of bee products in the era of *Aethina tumida*

3. **Project link to the Delphi priorities / EFSA Strategy topics**

Topic 19: Improving information on the occurrence and spread of harmful organisms: The spread of harmful organisms in terms of human and animal health

4. **Project description:**

Honey bees provide an immeasurable contribution to biodiversity thanks to the pollination service they grant in the ecosystem. European beekeeping suffers significant regional differences in colony losses due to climate and prevalence of diseases (Chauzat et al 2014, Laurent et al 2015).
Parasitical mite (*Varroa destructor*) and the associated viruses, which provide the highest colony losses worldwide, and small hive beetle (*Aethina tumida*), a new invasive species found for the first time in EU in southern Italy during September 2014, represents nowadays in EU the main issues on honey bee health. Moreover, other bee diseases like American Foulbrood, European Foulbrood and *Nosema* spp. play an important role in colony losses.
Because of a high risk of spreading *Aethina tumida* in Italy and the EU, with a better surveillance system it will be possible to control the parasite and the deriving damages in terms of amount of healthy hives, hive products and ensuring safe intra-EU trade of live bees, apiculture products and by-products.
The aim of the proposed project is to monitor the sanitary conditions of EU bees and measuring the health status of managed honey bee colonies. The new husbandry practices will be developed to increase honey bee health, enhancing in the meantime high quality and safe hive products.

5. **MS organisation(s) involved:**

Agricultural Institute of Slovenia, Hacquetova ulica 17, SI—1000 Ljubljana, email: maja.smodis.skerl[at]kis.si

6. **Project planning timeline:**

Start ASAP, duration 3 years

7. Link to related documents (if any):

Chauzat, P., Laurent, M., Rivière, M. P., Saugeon, C., Hendrix, P., Ribière-Chabert, M., & pathology Unit, H. (2014). A Pan-European Epidemiological Study on Honey Bee Colony Losses 2012–2013. European Union Reference Laboratory for Honeybee Health.

Laurent, M., Hendrikx, P., Ribiere-Chabert, M., & Chauzat, M. (2015). A pan-European epidemiological study on honeybee colony losses 2012–2014. EPILOBEE Report.

Template for first joint projects ideas under the EU RAA

1. **Country:** NORWAY (Slovenia 13)

2. **Project title:**

Occurrence of the microplastics in marine and inland surface waters and impact on the food safety and animal health and welfare

3. **Project link to the Delphi priorities / EFSA Strategy topics**

Annex B 11, 19

4. **Project description:**

The project is extended to the inland surface water environment.
Clean sea is an important prerequisite for the sea as a healthy food basket and we need to understand what impacts human activities on sea and on land have on the marine food source. Microplastics in the sea may contain and accumulate pollutants and threaten food safety and food security. There is evidence that many marine animals ingest micro plastics and pollutants can be released from micro plastic in the stomach of animals.
European Food Safety Authority (EFSA) published in June 2016 a review of literature and data on microplastics and nanoplastic in food, especially seafood. They conclude that there is not enough knowledge about uptake, revenue and possible health effects for a complete risk assessment of food intake with micro plastics. They also conclude that we need more occurrence data.
Food safety aspect for humans is one issue if components come into the food, but there is also aspects related to fish health and growth of the fish in the sea.
There is a need for more knowledge about the effects on the marine organisms that we eat and the effects on people who eat them. Therefore we need to gain more knowledge on occurrence of microplastic in marine environment and possible impacts on food safety for humans and health and welfare of animals.

5. **MS organisation(s) involved:**

National Laboratory for Health, Environment and Food; Prvomajska 1, 2000 Maribor, Slovenia (contact person: Boris Kolar; e-mail: boris.kolar@nlzoh.si)
University of Nova Gorica, Vipavska 13, Rožna Dolina, SI-5000 Nova Gorica, Slovenia

6. **Project planning timeline:**

TBA

7. **Link to related documents (if any):**

Template for first joint projects ideas under the EU RAA

1. **Country:**

Sweden and Finland

2. **Project title:**

Evidence based risk ranking of chemical and microbiological hazards in food

3. **Project link to the Delphi priorities / EFSA Strategy topics**

   a. This project proposal relates to the Delphi priority topic 1 (*Methods and systems for identifying emerging food risks*) listed in the Annex B of the EU RAA paper
   b. This project proposal also relates to the AF World Café discussion on *Methods for risk ranking of identified risks*
   c. This project proposes to contribute to the EFSA Strategy topics (*Process and toolbox for emerging risks*) under the heading 'Prepare for future risk assessment challenges').

   The EU RAA paper is accessible on the DMS here:
   https://dms.efsa.europa.eu/otcs/cs.exe?func=ll&objaction=overview&objid=15782409
   and the EFSA Strategy can be found on the EFSA Web site here :
   http://www.efsa.europa.eu/sites/default/files/corporate_publications/files/strategy2020.pdf

4. **Project description:**
   Brief description of the project, its main objectives and nature of activities (max 2000 characters)

   A Joint project is proposed by NFA (Sweden) and EVIRA (Finland) to develop and apply methods and concepts for risk ranking of chemical and microbiological hazards in foods. The project aims to explore the usefulness of common methodologies by investigating possible ways to address differences between microbial and chemical risk assessments and risk ranking. The goal is to improve the ability to carry out ranking of these hazards in foods, taking the available evidence and uncertainties into consideration.

   Work package 1
   Objective: To identify difference and commonalities in methods, concepts, and data for chemical and microbiological risk assessment.
   Approach: A review of literature on risk assessment and risk ranking methods of hazards, foods and processes will be carried out with the aim to summarize the types of risk related

information
necessary and data gaps for chemical and microbiological risk ranking, differences in concepts, and value based assumptions.

Work package 2
Objective: To develop and apply approaches/methods for risk ranking of chemicals in foods.
Approach: Case studies are carried out using a subset of methods for risk ranking of chemical hazards reviewed in WP1. Results from case studies are then used to explore if and how approaches can be further developed towards estimating health impacts like burden of disease, for example in terms of DALYs. The possibility to account for burden of both acute and chronic effects will be investigated. Methods that address data limitations and enable the inclusion of uncertainties in the risk ranking will be incorporated.

Work package 3
Objective: A European workshop on the general state-of-the-art of risk ranking, and potential use for prioritization and communication, with invited experts from EU member state organizations. Organizations and experts will be given the possibility to present and discuss their research.
Approach: The outcome of the Swedish-Finnish project other initiatives will be presented and discussed at the workshop. In addition to technical discussions the workshop will aim to support a discussion between risk assessors and risk managers regarding how risk ranking might be used to prioritize and communicate identified emerging risks

5. **MS organisation(s) involved:**
Contact details (name and email) of the responsible national body(ies)

NFA (Livsmedelsverket)
Box 622, 751 26 Uppsala, Sweden
Roland Lindqvist, roland.lindqvist@slv.se
Salomon Sand, salomon.sand@slv.se

EVIRA (Elintarviketurvallisuusvirasto)
Mustialagatan 3, 00790 Helsingfors, Finland
Pirkko Tuominen , Pirkko.Tuominen@evira.fi

6. **Project planning timeline:**
Tentative start date and duration

Start of project: 01/2017
Work package 1 completed: 12/2017
Work package 2 completed: 06/2019
Work package 3 completed second half 2019

7. **Link to related documents (if any):**
   a. EFSA BIOHAZ Panel (EFSA Panel on Biological Hazards), 2015. Scientific Opinion on the development of a risk ranking toolbox for the EFSA BIOHAZ Panel. EFSA Journal 2015;13(1):3939, 131 pp. doi:10.2903/j.efsa.2015.3939
   b. The Risk Thermometer - A tool for risk comparison. National Food Agency report nr 8, 2015