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Delivering an Effective, Resilient and Sustainable EU-China Food Safety Partnership

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727864 — EU-China-Safe

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EU-China-Safe aims at reducing food fraud and improving food safety through focusing on improving food legislation, food inspection and increasing access to information across Europe and China. State-of-the-art technologies including a virtual laboratory will create a unique space to share and demonstrate best practice. The use of innovative technologies will result in improved detection of adulteration of food products as well as increased traceability and transparency of global supply chains.

The project runs from September 2017 to August 2021. It involves 33 partners and is coordinated by QUB (The Queen’s University of Belfast, UK).

More information on the project can be found at www.euchinasafe.eu

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Nature of the deliverable		
ORDP	Open Research Data Pilot	
R	Document, report (excluding the periodic and final reports)	x
DEM	Demonstrator, pilot, prototype, plan designs	
DEC	Websites, patents filing, press & media actions, videos, etc.	
E	Ethics	
OTHER	Software, technical diagram, etc.	

Dissemination Level		
PU	Public, fully open, e.g. web	x
CO	Confidential, restricted under conditions set out in Model Grant Agreement	
CI	Classified, information as referred to in Commission Decision 2001/844/EC	



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1. SUMMARY

The training program was developed to strengthen links and facilitate communication between EU and China partners within EU-China laboratory network, in a close cooperation with all WPs. For the efficient knowledge transfer on developed technologies and other information generated within the project framework, comprehensive training program was developed, consisting of establishing a training network, young scientist's mobility program, organisation a series of the workshops and other events to disseminate technological developments and build rapport between Chinese and European researchers, representatives of academia, food authorities, food industry and other stakeholders. In cooperation with the RL2020 specific information was provided to laboratories of EU-China laboratory network and other potential stakeholders. Well established experts' institutes, acted as key trainers' centres also contributed to preparation of training materials; this includes QUB, VSCHT, BfR, Teagasc, UCD, WU, FERA. The training program will result in the capacity building of all involved participants and knowledge transfer of developed approaches and procedures dedicated for food safety and authenticity control and traceability to the target audience.

2. INTRODUCTION

Training program for consortium members both from EU and China, external scientists and stakeholders was developed in collaboration with EU and Chinese partners. To support worldwide knowledge dissemination to the community not involved directly in the training program e-learning tools were also established. These activities will assist in sharing expertise and knowledge transfer in the field of food safety, authenticity and traceability between these two trading blocks.

3. ACTIVITIES AND RESULTS

Various short-term, long-term virtual and on-site training and education activities at different levels were organised within the EU-China-Safe project training program. The training program was designed to facilitate exchange of expertise and knowledge transfer among the participants within and outside the project consortium, and support both staff and young scientists in development of their careers.

These were:

- Development of training and scientist mobility program targeted at students, young scientists and staff employing various tools with the aim to help in their capacity building and assisting in the transfer of knowledge.
- e-learning tools and webinar / another types of on-line activities to support worldwide knowledge dissemination to the community not involved directly in the training program (exploiting e.g. distance learning options, MOOCs, virtual communication tools).
- Organisation series of events focused on various aspects of food safety and authenticity and traceability, aimed at knowledge transfer to the community of professionals, associations, industry and other potential end-users. Workshops were organised with the inputs from all trainers' centres and WP leaders and aimed at presenting the achievements of the EU-China-Safe partnership.



Training program consisted of several phases.

PHASE I – Inventory of expertise and needs

Forms for inventory of expertise and needs for training to prepare appropriate training plan based on commodity (A) and analytical methodology (B) and other (C) approaches, considering following threats: (i) microbiological, (ii) chemical and (iii) food fraud, and one of the food products (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula were developed and distributed to potential trainers' centres, well established experts' institute, asking them for the offers for training to identify needs/priorities for training program.

Well established experts' institutes representing both academia, research and governmental organizations, and also having different expertise, acting as key trainers' centres and also contributing to the preparation of other training materials, include: QUB, Belfast, UK; VSCHT, Prague, Czech Republic; BfR, Berlin, Germany; TEAGASC, Dublin, Ireland; UCD, Dublin, Ireland; Wageningen UR, Wageningen, The Netherlands; FERA, York, UK.

PHASE II – Development of training program

Offers for training activities have been collated from all training centres, resulting in identification of 12 trainings (9 short-term trainings and 3 scientists' mobilities): 7 offers for Analytical methodology concept, 2 offers for Commodity & Other concept, and 3 offers for young scientist's mobility.

Consolidated offer for training program and application form was prepared for the call for participation in the training program that was accessible from http://www.euchinasafe.eu/training_network.html to get appropriate information from potential trainees, including plan for sustainability of obtained knowledge in respective field and CV (see **Annex I** and **Annex II**).

For training / dissemination workshops, 8 topics were also collated from the organizers (BfR, QUB, Nofima, VSCHT, WU, FERA, TEAGASC). In majority, these events were organised virtually (see Deliverable D6.3).

PHASE III – Identification of trainees

Information about the call was announced via the project website and social media and distributed by email via networks already established by all EU-China-Safe project partners. The first call for trainees opened at the beginning of March 2020, with the plan to start with training activities from June 2020, depending on the course offered. Due to the COVID-19 pandemic, the call was extended until the end of October 2020, with the option to submit the application even after that date, if needed. At that date, physical training program was still considered.

Until October 2020 nearly 40 applications for participation in the training program were submitted, supposing participation in on-site training activities (see **Annex III**). These applications were evaluated by respective trainers centres based on (i) background of a trainee, i.e. experience in the field and its relevance to the level of planned training, (ii) sustainability and its relevance to the planned training. Match making was done then considering only one physical participation in the training program per trainee.

Based on evaluations received from individual experts, trainees were selected and training matrix was prepared, reflecting capacities offered by experts' centres for individual trainings, and a rule that a trainee can participate only in one physical training.

Training budget was intended to cover costs associated with participation of trainees in the training program, i.e. travel, accommodation costs and other related costs:



- 1000 EUR for trainees from Europe (short-term training up to 1 week)
- 1500 EUR for trainees outside of Europe (short-term training up to 1 week)
- 2000 EUR for scientist mobilities (1-3 months)

Trainees from the EU-China-Safe consortium were reimbursed from the partner's budgets (this applied only to two trainees from VSCHT), external trainees were reimbursed from the VSCHT budget (VSCHT, EU-China-Safe training coordinator, hold the budget for training) based on lump sum. The form for money transfer was developed for this purpose, see **Annex IV**.

For each experts' centre appropriate budget was assigned and allocated to organisation's budget, including appropriate PMs, for on-site (later on virtual) organisation of a training.

Next steps included:

- Trainees were informed on their acceptance / non-acceptance for participation in the training program.
- VSCHT / Trainers communicated with selected trainees about proposal for the dates for individual trainings. In case of on-site trainings, trainers provided to trainees information on accommodation, venue, how to get there etc.
- Trainers were also asked to provide some handouts (presentations, videos, study materials, publications etc.) for trainees related to the topic of training. These materials will be used for public website (see Phase IV).
- For trainees, certificate on participation in the training (see **Annex V**) was prepared.

However, due to the ongoing COVID-19 pandemic, gradually it has shown that the training program will not be possible run as on-site activity. As a consequence, during spring 2021 we started with preparations and switched into an on-line format for most of planned events.

Most of trainings organised on-line were open to everyone who was interested to join it, of course depending on capacity of a certain training event.

Most of trainings were held according to the original plan, with two exceptions. Training on "Use of reference materials and the estimation of measurement uncertainty" was taken over by QUB (UK). Scientist mobility on „Hyperspectral imaging“ was not possible to organise due to COVID-19 pandemic restrictions.

List of organised trainings is provided in Table 1, short reports about individual trainings are collated in **Annex VI**.



Table 1: List of planned and organised training events

Plan:	Trainer	Date of training	No. of participants	Form of training
ANALYTICAL METHODOLOGY CONCEPT (list of organised short-term trainings)				
Spectroscopy	QUB	24-28 January 2022	1	on-site
Analytical strategies for multi-analyte / multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids	VSCHT	17 February 2022	26	virtual
Analytical approaches to detect wine fraud	BfR	1-3 November 2021	6	virtual
Rapid, microwave-assisted analysis of eight bound nitrofurans residues in meat	TEAGASC	9 September 2021	4	virtual
Training in whole genome sequencing (WGS) and analysis of genomic data	UCD	8 February 2022	3	virtual
Measurement Uncertainty & Reference Materials	QUB	14 December 2021	171	virtual
Analysis of POPs in food by GC-MS/MS for regulatory compliance	FERA	24-28 January 2022	2	on-site
COMMODITY/OTHER CONCEPT (list of organised short-term trainings)				
Comprehension of food fraud vulnerability	WU	16 February 2022	70	virtual
Introduction to Economics for Food Scientists	FERA	11 October 2021	16	virtual
YOUNG SCIENTISTS MOBILITY (list of organised scientist mobilities)				
Advance Mass Spectrometry	QUB	17 January – 11 February 2022	1	on-site
Analytical strategies for multi-analyte / multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids	VSCHT	1-28 February 2022	1	on-site

In total, these training events were attended by about 300 participants. This figure clearly demonstrates that even if it was not possible to implement original approach planning on-site training activities, pandemic can be considered as an opportunity for delivering the project outputs into broader audience via series of well fitted on-line events. This applied particularly to the topics that were not too technical for the audience. Materials prepared for these on-line and virtual activities will be exploited for sustainability phase of the training program (Phase IV).

In addition to the plan, FERA team also prepared series of training materials on sampling and surveillance program.

For some of trainings, trainers organised a short evaluation of training they delivered. The example for training on “Comprehension of food fraud vulnerability” is provided at Figure 1. For other trainings, short feedback form was used. The delegates found the course(s) content useful, e.g. exceeded expectations, was very beneficial, expanded knowledge in the field etc.

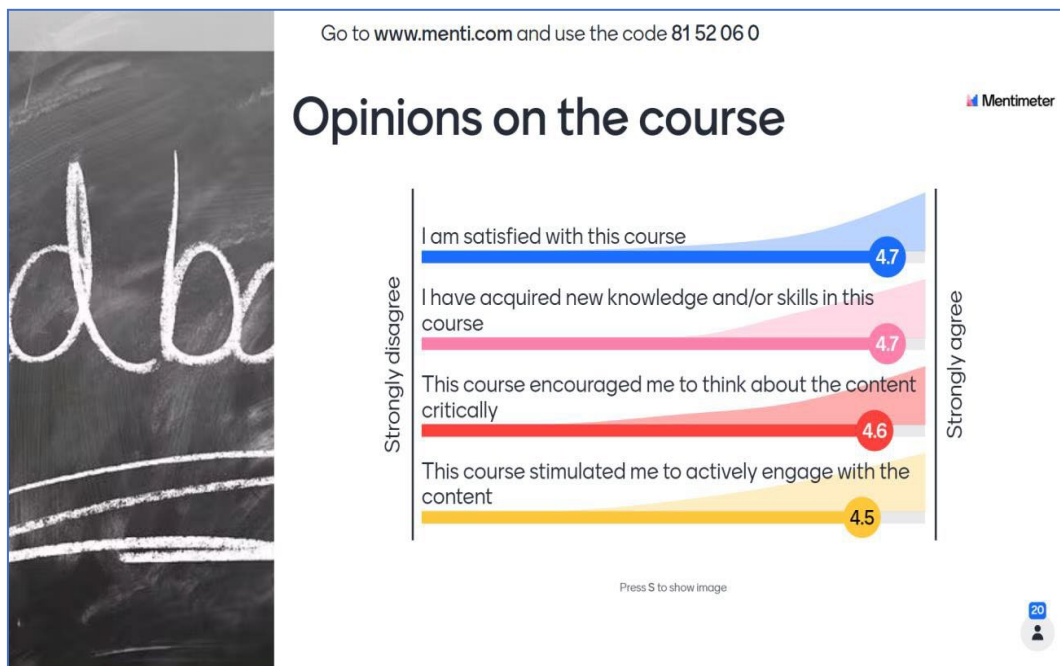


Figure 1: Evaluation of the training course on “Comprehension of food fraud vulnerability”

PHASE IV – Sustainability

For this phase several options have been proposed including (i) e-learning tools, (ii) train-the-trainer approach, and (ii) distance learning program.

(i) In collaboration of QUB, EIT Food and FutureLearn, series of Online Courses (MOOCs and SPOCs) was developed. These courses were attended in total by more than 14 600 participants:

- “Farm to Fork: Sustainable food production in a changing environment” (total 5 000 learners)
- “Animal Feed Production: Feed Quality and Feed Safety” (total 100 learners)
- “An Introduction to Food Systems” (total 122 learners)
- “An Introduction to Food Science” (total 3 900 learners)
- “Revolutionising the Food Chain with Technology” (total 1 900 learners)
- “Understanding Food Supply Chains in a Time of Crisis” (total 3 600 learners)

More information is available at http://www.euchinasafe.eu/massive_online_open_courses.html.



MASSIVE ONLINE OPEN COURSES

MOOC: Farm to Fork: Sustainable food production in a changing environment

About: How does food reach our plates? How is the food industry changing? What threats are there to food supply chains? How can we build a sustainable food industry? Queens University, Belfast in partnership with EIT Food, University of Turin, Analytics Engines and Italian Livestock Breeders Association (AIA) have designed an open online course to answer these questions and explore food and agriculture in the modern world. Over four weeks, learners will learn about the complexity of the global food chain, the vulnerability of the food industry to emerging threats and the solutions to stopping these threats early. Learners will also consider the issues surrounding production of food of animal origin.

*The course is open.
Enrol now here*

MOOC: Introduction to Food Science

The integrity of food is of increasing consumer concern due to a number of highly publicised food authenticity and contamination scares. In addition, there is currently 3.5 billion people suffering from malnutrition, whilst the worldwide numbers of overweight (approx. 2 billion) and obese (over 500 million) people is growing. Queens University, Belfast, in collaboration with the University of Madrid, CSIC, University of Turin and University of Aarhus are designing an open online course to address these concerns; create an awareness and understanding of the food system among consumers; and empower citizens to make safe, healthy and sustainable food choices. The course will cover topics including: food contaminants; control of food safety; ethical issues and sustainability considerations; and consumer information and responsibilities. The aim of the course is to help consumers to become responsible partners in the food system, overcome their concerns and create trust in food production; spark a new generation of informed consumers; and showcase the vast number of opportunities which exist within the food sector.

*The course is open.
Enrol now here*

SPOC: Animal Feed Production: Feed Quality and Feed Safety

About: The quality and safety of animal feed are of primary importance to ensuring healthy meat production systems. In order to help understand animal feeds and their components to help improve farm practices and/or enhance business opportunities in the agriculture industry, EIT Food, Queens University, Belfast, The University of Turin and The German Institute of Technologies (DIL) have combined their knowledge and experience in order to develop two complimentary online professional courses which outlines the quality management system, control measures and legislation which exists to ensure animal feed production is suitable for food producing animals within the European Union.

The Animal Feed Quality Course outlines the quality management system, good manufacturing practices (GMP), hazard analysis critical control point principles (HACCP), auditing skills, feed ingredient quality and adulteration in feed quality. Start date: Monday 27th April 2020.

The Animal Feed Safety Course: The second course on feed safety explores the different feedstuff ingredients, legislation, chemical, physical and microbiological contaminants, feed processing and feed formulation. Start date: Monday 1st June 2020.

The courses are designed for animal feed mill managers and new or existing operators looking to continue their professional development or training. It is also useful for administrative and sales staff working in the sector; food scientists; students; process engineers and regulators on feed quality assurance practices.

*The course is open.
Enrol now here*

Animal Feed Production: Feed Quality

Animal Feed Production: Feed Safety

SPOC: An Introduction to Food Systems

The food sector is undergoing dramatic changes fostered by global challenges such as a growing competition for resources, a rise of the global population, and changes in demographics and consumer behaviour. There is limited knowledge on how to effectively create integrated value networks that can come up with new solutions to these challenges. An increasing integration of previously unconnected and fragmented actors is needed to bring in new scientific breakthroughs and technical developments under the consideration of socio-economic aspects. A consortium of universities and industry partners within the EIT Food network created a professional online course to introduce participants to the concept of Food Systems. The participants will learn about its origins and its potential use such as e.g. to create new valued-added products and services to facilitate more sustainable and healthier diets and foster circularity and resource efficiency. System science principles will be introduced to analyze and optimize the workings of complex systems. Finally, specific elements of Food Systems will be discussed and possible cases of new networks considered.

This course is an invite only course but may be offered to professionals if demanded. Please contact qub.eitfoodeducation@qub.ac.uk for more information.

Figure 2: Screenshot of webpage with the list of Online Courses offered by EU-China-Safe

(ii) Train-the-trainer approach is closely related to the Phase III where on-site training activities were expected and that was massively affected by COVID-19 pandemic. As a contingency approach, materials provided by trainer's centres will be accessible on the project website, at http://www.euchinasafe.eu/training_materials.html.

In addition to the planned training program, series of twinning activities in response to tasks of individual EU-China-Safe WPs were organised to support knowledge transfer on developed methodologies between EU and China project partners. These activities can be also considered for support and education of new generation of scientists and a train-the-trainer approach.

a) 4 PhD students from CFSA at UCD on topics:

- A study of the ecology, molecular characterization and metabolites of *Clostridium* spp. in relation to human botulism and necrotizing enterocolitis

- Antimicrobial resistance mechanisms to crucially important drugs associated with Salmonella enterica recovered from food sources in China
 - Discovering genomic profiles to evaluate hyper ability to acquire AMR mutations of common foodborne pathogenic bacteria using machine learning
 - Kinetics of contamination and transmission of Hepatitis E virus in pork production chain in China
- b) 1 post-doc from THZJ at BfR and QUB as:
- Participant of BfR Summer Academy
 - UK Royal Society Newton Fellow
- c) 3 PhD and post-docs from CNRIFFI at BfR and VSCHT on topics:
- The study on the identification technology of wine origin and variety authenticity
 - Chinese wine metabolomics analysis basing UPLC-Q/TOF HRMS

As a component of training network, in cooperation with the RL2020, specific information is available from the project website at http://www.euchinasafe.eu/virtual_reference_lab.html to laboratories of EU-China laboratory network and other potential stakeholders. So far listed methods and other useful information are (i) COVID-19 sampling and testing in food, (ii) methods for dioxin analysis in food and feed, (iii) methods for food safety testing, (iv) methods for food authenticity testing, (v) project deliverables and reports.



VIRTUAL REFERENCE LAB



A virtual 'Reference laboratory 2020' (RL2020) involving EU and Chinese scientists and technicians will be developed to showcase and demonstrate best practice and the state of the art in high quality food analysis. The EU-China-Safe project will develop a "twinning" model to establish a network of EU and Chinese laboratories, in order to align and harmonise the activities of these two complex networks.

By bringing together a powerful and unique combination of EURL, NRLs and CNRLs with complementary expertise, EU-China-Safe will enable the EU and China to work more closely together in harmonising a broad range of analytical methods. The virtual laboratory will benefit from modern communication (web based) and a common IT based platform in order to support a jointly operated method inventory including standard operation procedures, validation, quality control measures and laboratory web conferences for the selected best practice examples in authenticity testing and food safety analysis.

Links

[COVID-19 sampling and testing in food](#)

[Dioxin analysis in food and feed](#)

[Methods for food safety testing](#)

[Methods for food authenticity testing](#)

[Project deliverables and reports](#)

Figure 3: Screenshot of webpage for Virtual Reference Lab (RL2020)

(iii) The Distance Learning Programme developed by QUB provided a number of study options including at Postgraduate Certificate (PgCert), Postgraduate Diploma (PgDip), and at Masters (MSc) level. 3 modules were offered: (i) Food Integrity, Fraud and Traceability (from March 2020), (ii) Global Food Standards and Legislation (from March 2020) and (iii) Advanced Analytical Tools for Food Safety (from September 2020).



4. CONCLUDING REMARKS

In spite of COVID-19 pandemic that massively affected all training activities, project consortium was progressing very well and efficiently implemented combination of on-site and particularly on-line training activities and delivered planned and also some additional activities.

5. REFERENCES

Involvement of all project partners that contributed widely to the completion of this deliverable by organisation of training and twinning activities is acknowledged.

6. APPENDIX

- Annex I:** Call for participation in the EU-China-Safe training program
- Annex II:** Application form for participation in the EU-China-Safe training and scientist mobility program
- Annex III:** List of applications for participation in the EU-China-Safe training program
- Annex IV:** Request for contribution to cover T&S expenses associated with participation in the EU-China-Safe training program
- Annex V:** Certificate on participation in the EU-China-Safe training program
- Annex VI:** Reports about individual training events in the EU-China-Safe training program



Annex I: Call for participation in the EU-China-Safe training program



**Delivering an Effective, Resilient and Sustainable
EU-China Food Safety Partnership**

CALL FOR TRAINEES for participation in the EU-China-Safe TRAINING PROGRAM

www.euchinasafe.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 727864 and the Chinese Ministry of Science and Technology (MOST) for the National Key R&D Program of China under 2017YFE0110800.

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EU-China-Safe TRAINING PROGRAM: Information

Various short-term and long-term training and education activities at different levels are planned, in order to establish a European-Chinese basis for permanent education in the field of food safety and authenticity. Several concepts will be applied, both based on commodity (A) and analytical methodology (B) and other (C) approaches, considering following threats: (i) microbiological, (ii) chemical and (iii) food fraud, and one of the food products (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula.

APPLY for participation in short-term trainings and young scientist mobility!

- ⇒ **Short-term trainings** consisting of 2 steps training approach („train the trainer“)
 - Phase I: Future trainers will be trained in one of offered concepts & threats
 - Phase II: Trained trainers will organize targeted training at an organisation, at national level or for European industrial/ professional organisations for scientists, academia, researchers, control labs etc. (via hands on, one-to-one, training course,...)
- ⇒ **Young scientist mobility** both within the project consortium and external participants, with the aim both to help in capacity building of young researchers and assist in the transfer of knowledge within/outside the project consortium
- ⇒ **e-learning** interactive tool(s)/webinar(s) to support worldwide knowledge dissemination to the community both involved but also not involved directly in the training network
- ⇒ **Workshops** both for the project consortium and external participants, focused on different topics related will be organised

WHO CAN APPLY?

- EU-China-Safe consortium members
- External participants (scientists and other stakeholders, such as PhD students, post-docs, scientists, academia, researchers, staff of control labs, governmental organisations, etc.)

WHAT IS THE DEADLINE?

- **Call for applications will be open until 31 October 2020, 17:00 (CET)**

HOW TO APPLY?

- Using the form accessible from the EU-China-Safe website/Training/Training Network (http://www.euchinasafe.eu/training_network.html) or other portals or distributed by email.

Register for the project communication to be informed on the news on training program [HERE!](#)

IMPORTANT NOTE:

After submission of the application form do not forget to send us also your CV at euchinasafe@euchinasafe.eu, with the email subject: Application for training program – name and surname of applicant.

Europass format of CV is preferred, 4 pages in maximum

(<http://europass.cedefop.europa.eu/documents/curriculum-vitae/templates-instructions>)

SELECTION PROCEDURE / CRITERIA TO BE MET:

- Application form to be completed to get appropriate information from potential trainees (any trainee can participate only in one training)
- Sustainability to be assured (please fill in respective part of the Application form)
Trainees = future trainers. Therefore, the applicant should document the potential to organise follow/up training targeted for various stakeholders groups
- CV to be submitted (Europass format preferred)
<http://europass.cedefop.europa.eu/documents/curriculum-vitae/templates-instructions>

BUDGET FOR TRAINING:

- Short-term trainings
max. 2 weeks, can be funded up to 1 000 € for travels in Europe, 1 500 € for travels in China
- Young scientists mobility
1-3 months, can be funded up to 2 000 €/person

Who are the TRAINERS?

Well established experts' institutes will act as key trainers' centres and also contribute to preparation of other training materials:

- QUB, Belfast, UK
- UCT Prague, Prague, Czech Republic
- BfR, Berlin, Germany
- TEAGASC, Dublin, Ireland
- UCD, Dublin, Ireland
- Wageningen UR, Wageningen, The Netherlands
- JRC, Geel, Belgium
- FERA, York, UK

OFFERS for trainings in the EU-China-Safe TRAINING PROGRAM

Name of the organisation:	Institute for Global Food Security, Biological Sciences, Queen's University Belfast (QUB)
Address of the organisation:	19 Chlorine Gardens, Belfast, BT9 5DL, Northern Ireland
Webpage:	https://www.qub.ac.uk/Research/GRI/TheInstituteForGlobalFoodSecurity/

Specification of the SHORT-TERM training offer related to 'ANALYTICAL METHODOLOGY CONCEPT'	
Title of the training:	Spectroscopy
Brief description of a training content:	QUB have developed excellent laboratory based and handheld based methods to detect the adulteration of many food ingredients and commodities. These are based on different forms of molecular spectroscopy (RAMAN, NIR, FT-IR). An important part of the work is the ability to develop robust and reliable chemometric models. During the training how to achieve this will be demonstrated.
Training related to one of the food products: (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula	Spices
Training related to one of the threats: (i) microbiological, (ii) chemical, (iii) food fraud	Food fraud
Specific expertise/competence of the organisation relevant to the training topic:	<p>The feasibility of applying NIR and FT-IR fingerprinting to detect adulteration in black pepper. Wilde, A. S., Haughey, S. A., Galvin-King, P. & Elliott, C. T., 01 Jun 2019, In : Food Control. 100, p. 1-7 7 p.</p> <p>The Rapid Detection of Sage Adulteration Using Fourier Transform Infra-Red (FTIR) Spectroscopy and Chemometrics. Galvin-King, P., Haughey, S. A., Montgomery, H. & Elliott, C. T., 16 Nov 2018, In : Journal of AOAC International. 102, 9 p.</p> <p>Herb and spice fraud; the drivers, challenges and detection. Galvin-King, P., Haughey, S. A. & Elliott, C. T., Jun 2018, In : Food Control. 88, p. 85-97 13 p.</p> <p>Development of a comprehensive analytical platform for the detection and quantitation of food fraud using a biomarker approach. The oregano adulteration case study. Wielogorska, E., Chevallier, O., Black, C., Galvin-King, P., Delêtre, M., Kelleher, C. T., Haughey, S. A. & Elliott, C. T., 15 Jan 2018, In : Food Chemistry. 239, p. 32-39</p> <p>A comprehensive strategy to detect the fraudulent adulteration of herbs: The oregano approach Black, C., Haughey, S. A., Chevallier, O. P., Galvin-King, P. & Elliott, C. T., 03 May 2016, In : Food Chemistry. 210, p. 551-557 7 p.</p>
Duration (days):	2 weeks
Starting date:	Year 2021, date of training will be specified at the beginning of 2021

Capacity (no. of trainees):	Up to 3
Knowledge of trainees required for offered training: (i) beginner, (ii) intermediate, (iii) advanced	Intermediate Some knowledge/experience of screening tests
Venue of the training:	Institute for Global Food Security, Queen's University Belfast

Specification of the YOUNG SCIENTISTS mobility offer for both concepts	
Title of the training:	Advance Mass Spectrometry
Brief description of a training content:	An intensive training programme on the use of ambient mass spectrometry (DESI, DART, REIMS coupled to mass spec) to detect the adulteration of food ingredients and commodities will be given. This will include training on how to build chemometric models.
Training related to one of the food products: (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula	Spices Dairy infant formula
Training related to one of the threats: (i) microbiological, (ii) chemical, (iii) food fraud	Food fraud
Specific expertise/competence of the organisation relevant to the training topic:	<p>Black, C., Haughey, S. A., Chevallier, O. P., Galvin-King, P. & Elliott, C. T. A comprehensive strategy to detect the fraudulent adulteration of herbs: Te oregano approach. <i>Food Chem.</i> 210, 551–557 (2016)</p> <p>Black, C. et al. A real time metabolomic profiling approach to detecting fish fraud using rapid evaporative ionisation mass spectrometry. <i>Metabolomics</i> 13, 1 (2017)</p> <p>Kosek, V. et al. Ambient mass spectrometry based on REIMS for the rapid detection of adulteration of minced meats by the use of a range of additives. <i>Food Control</i> 104, 5-56 (2019)</p> <p>Chaterjee, N.S., Chevallier, O.P., Wielogorska, E., Black, C., Elliott, C.T. Simultaneous authentication of species identity and geographical origin of shrimps: Untargeted metabolomics to recurrent biomarker ions. <i>Journal of Chromatography A</i> 1599, 75-84 (2019)</p> <p>Black, C. et al. Rapid detection and specific identification of offals within minced beef samples utilising ambient mass spectrometry. <i>Scientific Reports</i> 9, 6295 (2019)</p>
Duration (days):	3 months
Knowledge of trainees required for offered training: (i) beginner, (ii) intermediate, (iii) advanced	Advanced Very good working knowledge of mass spectrometry required
Starting date:	Year 2021, date of training will be specified at the beginning of 2021
Venue of the mobility:	Institute for Global Food Security, Queen's University Belfast

Name of the organisation:	University of Chemistry and Technology, Prague (UCT Prague)
Address of the organisation:	Technicka 5, 166 28 Prague 6, Czechia
Webpage:	www.vscht.cz ; http://uapv.vscht.cz/

Specification of the SHORT-TERM training offer related to 'ANALYTICAL METHODOLOGY CONCEPT'	
Title of the training:	Analytical strategies for multi-analyte / multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids
Brief description of a training content:	A theoretical and practical training in method development and validation for pesticide residues, mycotoxins and plant alkaloids screening in various matrices using methods based on LC/GC - tandem high resolution mass spectrometry (MS/MS, HRMS/MS) is offered. Training will cover experimental design, demonstration of various instrumental applications (hands-on), data processing and interpretation, QA/QC and regulatory issues. Discussion of ISO 17025 accreditation requirements.
Training related to one of the food products: (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula	Fruits/vegetables
Training related to one of the threats: (i) microbiological, (ii) chemical, (iii) food fraud	Chemical
Specific expertise/competence of the organisation relevant to the training topic:	UCT Prague, Department of Food Analysis and Nutrition (part of which is ISO 17025 accredited lab) provides expert services to external partners and is involved in many research activities and projects related to chemical food safety. UCT regularly organizes trainings, training schools, education workshops and series of symposia on Recent Advances in Food Analysis (RAFA). More details on publications and projects can be found at https://uapv.vscht.cz/?loadall
Duration (days):	Up to 5 days
Starting date:	Year 2021, date of training will be specified at the beginning of 2021
Capacity (no. of trainees):	3
Knowledge of trainees required for offered training: (i) beginner, (ii) intermediate, (iii) advanced	Intermediate
Venue of the training:	UCT Prague, Department of Food Analysis and Nutrition, Prague, Czechia

Specification of the YOUNG SCIENTISTS mobility offer for both concepts	
Title of the training:	Analytical strategies for multi-analyte / multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids
Brief description of a training content:	A theoretical and practical training in method development for pesticide residues, mycotoxins and plant alkaloids screening in various matrices using methods based on LC/GC - tandem high resolution mass spectrometry (MS/MS, HRMS/MS) is offered. Training will cover experimental design, demonstration of various instrumental applications (hands-on), data processing and interpretation, validation and QA/QC issues; approaches for discovering and identification of 'unknown' residues will be also discussed.
Training related to one of the food products: (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula	Fruits/vegetables Wine
Training related to one of the threats: (i) microbiological, (ii) chemical, (iii) food fraud	Chemical
Specific expertise/competence of the organisation relevant to the training topic:	UCT Prague, Department of Food Analysis and Nutrition (part of which is ISO 17025 accredited lab), provides expert services to external partners and is involved in many research activities and projects related to chemical food safety. UCT regularly organizes trainings, training schools, education workshops and series of symposia on Recent Advances in Food Analysis (RAFA). More details on publications and projects can be found at https://uapv.vscht.cz/?loadall
Duration (days):	1 month
Knowledge of trainees required for offered training: (i) beginner, (ii) intermediate, (iii) advanced	Intermediate
Starting date:	Year 2021, date of training will be specified at the beginning of 2021
Venue of the mobility:	UCT Prague, Department of Food Analysis and Nutrition, Prague, Czechia

Name of the organisation:	Federal Institute for Risk Assessment (BfR)
Address of the organisation:	Max-Dohrn-Straße 8-10, 10589 Berlin, Germany
Webpage:	https://www.bfr.bund.de

Specification of the SHORT-TERM training offer related to 'ANALYTICAL METHODOLOGY CONCEPT'	
Title of the training:	Analytical approaches to detect wine fraud
Brief description of a training content:	<p>A theoretical and practical training in wine authentication analysis is offered.</p> <p>Topics are selected relevant chromatographic approaches and the analysis of stable isotope ratios (for the elements C, O and H) of wine. These ratios are used to determine e.g. the origin of a wine, but also to identify watering or the addition of beet or cane sugar.</p> <p>The training covers</p> <ul style="list-style-type: none"> • Theory and technical background • Sample preparation techniques • Hands-on instrument experience • Data analysis • Validation and quality assurance
Training related to one of the food products: (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula	Wine
Training related to one of the threats: (i) microbiological, (ii) chemical, (iii) food fraud	Food fraud
Specific expertise/competence of the organisation relevant to the training topic:	<p>BfR hosts the German senior expert office for the import control of wine.</p> <p>INFORMATION HERE</p>
Duration (days):	5 (ideally Mon-Fri)
Starting date:	Year 2021, date of training will be specified at the beginning of 2021
Capacity (no. of trainees):	5
Knowledge of trainees required for offered training: (i) beginner, (ii) intermediate, (iii) advanced	Intermediate
Venue of the training:	BfR, Berlin, Germany

Name of the organisation:	Teagasc Food Research Centre, Ashtown (TEAGASC)
Address of the organisation:	Teagasc Food Research Centre, Ashtown, Dublin 15, D15 KN3K, Ireland
Webpage:	www.teagasc.ie

Specification of the SHORT-TERM training offer related to 'ANALYTICAL METHODOLOGY CONCEPT'	
Title of the training:	Rapid, microwave-assisted analysis of eight bound nitrofurans residues in meat
Brief description of a training content:	This training will involve the transfer of a confirmatory LC-MS/MS method for the rapid, microwave-assisted analysis of eight bound nitrofurans residues in meat. This method was developed in Teagasc, and will be transferred to the Chinese partners, on-site in Belfast, which will require the trainees to travel to Ireland. The training will cover all steps of the protocol, including tissue washing, microwave-assisted derivatisation, neutralisation, a QuEChERS-based extraction and LC-MS/MS determination.
Training related to one of the food products: (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula	Processed meat
Training related to one of the threats: (i) microbiological, (ii) chemical, (iii) food fraud	Chemical
Specific expertise/competence of the organisation relevant to the training topic:	This method was developed and validated in Teagasc Food Research Centre, Ashtown, by a PhD student, Gemma Regan, on the EU-China Safe project titled "Development of multi-residue methodology for the analysis of veterinary drug residues in food, using mass spectrometry based detection", under the supervision of Dr Martin Danaher, who specialises in chemical residue analysis in food.
Duration (days):	4-5 days
Starting date:	Year 2021, date of training will be specified at the beginning of 2021
Capacity (no. of trainees):	4
Knowledge of trainees required for offered training: (i) beginner, (ii) intermediate, (iii) advanced	Intermediate
Venue of the training:	Agri-Food and Biosciences Institute (AFBI), Belfast

Name of the organisation:	University College Dublin (UCD)
Address of the organisation:	UCD-Centre for Food Safety, University College Dublin, Belfield, Dublin D04 N2E5, Ireland
Webpage:	www.ucd.ie/cfs

Specification of the SHORT-TERM training offer related to 'ANALYTICAL METHODOLOGY CONCEPT'	
Title of the training:	Training in whole genome sequencing (WGS) and analysis of genomic data
Brief description of a training content:	<p>In this practical training offering, participants, will gain conceptual and practical knowledge in a fast-developing area of research, namely bacterial whole genome sequencing (WGS).</p> <p>The programme will cover all the aspects of learning, specifically tailored to improve laboratory skills and will include lecture-presentations, practical laboratory exercises and bioinformatics mentoring.</p> <p>Completion of this training programme, will provide participants with an excellent introduction to the application of WGS-based strategies to support bacterial hazard characterisation.</p>
Training related to one of the food products: (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula	All supply chains
Training related to one of the threats: (i) microbiological, (ii) chemical, (iii) food fraud	Microbiological
Specific expertise/competence of the organisation relevant to the training topic:	<p>Li, W., Bai, L., Ma., X., Zhang, X., Li, X., Huang, J.Y., Fanning, S. and Guo, Y. Sentinel listeriosis surveillance in selected hospitals, China, 2013-2017. <i>Emerging Infectious Diseases</i> (2019) 25: 2274-2277. doi: 10.3201/eid2512.180892</p> <p>Hurley, D., Luque-Sastre, L., Parker, C.T., Huynh, S., Eshwar, A.K., Nguyen, S.V., Andrews, N., Moura, A., Fox, E.M., Jordan, K., Lehner, A., Stephan, R. and Fanning, S. Whole genome sequence-based characterisation of 100 <i>Listeria monocytogenes</i> isolates collected from food processing environments over a 4-year period. <i>mSphere</i> (2019) 7;(4). pii: e00252: doi: 10.2807/1560-7917.ES.2019.24.25.1900340</p>
Duration (days):	14 days
Starting date:	Year 2021, date of training will be specified at the beginning of 2021
Capacity (no. of trainees):	5
Knowledge of trainees required for offered training: (i) beginner, (ii) intermediate, (iii) advanced	Intermediate
Venue of the training:	University College Dublin

Name of the organisation:	Wageningen University & Research (WUR)
Address of the organisation:	Akkermaalsbos 2, 6708 WB Wageningen, the Netherlands
Webpage:	https://www.wur.nl/en/Research-Results/Research-Institutes/food-safety-research/Food-fraud-and-Composition.htm

Specification of the SHORT-TERM training offer related to 'COMMODITY / OTHER CONCEPT'	
Title of the training:	Food fraud vulnerability assessments
Brief description of a training content:	The one day course consists of the following components: <ul style="list-style-type: none"> • The theoretical concept of food fraud; • Relevant fraud indicators; • Fraud vulnerability assessment strategies and interpretation of fraud vulnerability assessment results; • Development of control plans • Conclusions drawn from vulnerability assessments so far
Training related to one of the food products: (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula	All supply chains
Training related to one of the threats: (i) microbiological, (ii) chemical, (iii) food fraud	Food fraud
Specific expertise/competence of the organisation relevant to the training topic:	INFORMATION HERE
Duration (days):	1 day
Starting date:	Year 2021, date of training will be specified at the beginning of 2021
Capacity (no. of trainees):	Minimum of 8 trainees required, max 15
Knowledge of trainees required for offered training: (i) beginner, (ii) intermediate, (iii) advanced	Beginner (just some basic knowledge of food fraud)
Venue of the training:	Wageningen campus, the Netherlands

Specification of the YOUNG SCIENTISTS mobility offer for both concepts	
Title of the training:	Hyperspectral imaging
Brief description of a training content:	This training focuses on hyperspectral imaging and includes considerations for analysis conditions, recording, data acquisition as well as data processing (chemometrics). The applications deal with the discrimination of foods with a fine particle structure in order to distinguish between product-foreign material and the product, or particular features of the food product group due to e.g. processing. The candidate will get an introduction on hyperspectral imaging and work along PhD students on a product of choice (to be agreed

	between candidate and host) to familiarise him/herself with the technique.
Training related to one of the food products: (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula	Spices or dairy infant formula
Training related to one of the threats: (i) microbiological, (ii) chemical, (iii) food fraud	Food fraud
Specific expertise/competence of the organisation relevant to the training topic:	INFORMATION HERE
Duration (days):	2-3 months
Knowledge of trainees required for offered training: (i) beginner, (ii) intermediate, (iii) advanced	Intermediate (some expertise with vibrational spectroscopy and chemometrics)
Starting date:	Year 2021, date of training will be specified at the beginning of 2021
Venue of the mobility:	Wageningen campus, the Netherlands

Name of the organisation:	European Commission Joint Research Centre (JRC)
Address of the organisation:	European Commission, Joint Research Centre Directorate F - Health, Consumers and Reference Materials Retieseweg 111, 2440 Geel, Belgium
Webpage:	https://ec.europa.eu/jrc/en

Specification of the SHORT-TERM training offer related to 'ANALYTICAL METHODOLOGY CONCEPT'	
Title of the training:	Use of reference materials and the estimation of measurement uncertainty
Brief description of a training content:	<ul style="list-style-type: none"> • This course provides participants with the theoretical basis for the estimation of measurement uncertainty and establishment of traceability. Measurement uncertainty and traceability are essential for the evaluation of measurement results. • Reference materials are key tools for achieving traceability of measurements, proving the accuracy of methods and demonstrating the proficiency of laboratories. This knowledge is applied to the proper selection and use of reference materials.
Training related to one of the food products: (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula	All supply chains
Training related to one of the threats: (i) microbiological, (ii) chemical, (iii) food fraud	Chemical Food fraud
Specific expertise/competence of the organisation relevant to the training topic:	As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent evidence throughout the whole policy cycle.
Duration (days):	2 days
Starting date:	Year 2021, date of training will be specified at the beginning of 2021
Capacity (no. of trainees):	5
Knowledge of trainees required for offered training: (i) beginner, (ii) intermediate, (iii) advanced	Intermediate (a postgraduate level in chemistry and knowledge of concepts such as uncertainty, traceability, error propagation and general analytical measurements is needed)
Venue of the training:	European Commission, Joint Research Centre Retieseweg 111, 2440 Geel, Belgium

Name of the organisation:	Fera Science Ltd (FERA)
Address of the organisation:	NAFIC, Sand Hutton, York, North Yorkshire, UK YO41 1LZ, UK
Webpage:	https://www.fera.co.uk

Specification of the SHORT-TERM training offer related to 'ANALYTICAL METHODOLOGY CONCEPT'	
Title of the training:	Analysis of POPs in food by GC-MS/MS for regulatory compliance
Brief description of a training content:	GC-HRMS has been the go-to tool for trace analysis of POPs in foods. HRMS instruments require highly trained analysts to operate and are expensive. Development of validated methods for analysis of POPs in foods based on MS/MS technology would allow more laboratories to routinely look for POPs in food at lower cost. Emphasis would be on regulated compounds (dioxins, PCBs, PAHs) and non-regulated compounds of concern such as BFRs. Extraction methods will be assessed. Quality assurance criteria (LOD/ LOQ calculation) with reference to EU regulations, uncertainty calculation methods and use of reference materials will be included.
Training related to one of the food products: (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula	Processed meats, spices, dairy products, infant formula
Training related to one of the threats: (i) microbiological, (ii) chemical, (iii) food fraud	Chemical
Specific expertise/competence of the organisation relevant to the training topic:	Fera are the UK NRL for halogenated contaminants in food and feed, food processing contaminants https://www.fera.co.uk/about-us/national-reference-laboratory/dioxins-pcbs
Duration (days):	5 days
Starting date:	Year 2021, date of training will be specified at the beginning of 2021
Capacity (no. of trainees):	5
Knowledge of trainees required for offered training: (i) beginner, (ii) intermediate, (iii) advanced	Beginner/ Intermediate
Venue of the training:	Fera Science Ltd, UK

Specification of the SHORT-TERM training offer related to ‘COMMODITY / OTHER CONCEPT’	
Title of the training:	Introduction to the socio-economics of food fraud and food safety
Brief description of a training content:	<p>The objective of this short course is to provide non-economists with an understanding of the underlying theory used to assess food fraud and food safety incidents in order to engage more fully in interdisciplinary working. Topics covered will include:</p> <ol style="list-style-type: none"> 1) Basic economic concepts 2) Theory of the firm 3) Behavioural economics 4) Cost benefit analysis 5) The inclusion of non-market impacts 6) The role of policy <p>The outcome for delegates will be a better understanding of how economic assessments of impact are conducted and how the estimates are derived. This will extend to beyond a simple analysis of business-based costs to include non-market impacts (e.g. human health) as well as indirect impacts caused by mitigating behaviours.</p> <p>Over the last four decades, many food related scandals (both through disease and fraud) have contributed to the global concern around food safety. The global integration of the food system increases supply chain complexity inevitably increases the risks associated with food safety (Ellefson et al., 2012) and the need for compliance with international quality standards (Lemanzyk et al., 2015). The human cost related to foodborne outbreaks is extremely high: The World Health Organization estimates 600 million – almost 1 in 10 people in the world – fall ill after eating contaminated food and 420000 die every year¹. Nevertheless, the impact of food system failures is much higher than medical costs and lost productivity. The inability to meet food safety requirements may cause a vicious cycle generated by lower incomes and reduced access to food which, in turn, can lead to increased medical costs and decreased worker productivity (Devleesschauwer et al., 2018, p. 84). The potential impact of food safety/fraud incidents on a business can be devastating; a single event can bring significant economic losses due to direct costs (disruption to operations while managing the recall, direct cost of recalling stock, analytical laboratory testing etc) and indirect ones such as the brand damage and loss of consumer confidence/change in consumption preferences (Kennedy et al., 2009; Hussain and Dawson, 2013).</p> <p><i>References</i></p>

¹ <https://www.who.int/en/news-room/fact-sheets/detail/food-safety>

	<p>Devleesschauwer, B., Scharff, R.L., Kowalczyk, B.B. and Havelaar, A.H., 2018. Burden and Risk Assessment of Foodborne Disease. In Food Safety Economics (pp. 83-106). Springer, Cham.</p> <p>Ellefson, W., Zach, L. and Sullivan, D. eds., 2012. Improving import food safety (Vol. 85). John Wiley & Sons.</p> <p>Hussain, M.A. and Dawson, C.O., 2013. Economic impact of food safety outbreaks on food businesses. Foods, 2(4), pp.585-589.</p> <p>Kennedy, J., Delaney, L., McGloin, A. and Wall, P.G., 2009. Public perceptions of the dioxin crisis in Irish pork.</p> <p>Lemanyk, T., Anding, K., Linss, G., Hernández, J.R. and Theska, R., 2015. Food Safety by Using Machine Learning for Automatic Classification of Seeds of the South-American Incanut Plant. In Journal of Physics: Conference Series (Vol. 588, No. 1, p. 012036). IOP Publishing.</p>
<p>Training related to one of the food products: (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula</p>	<p>Processed meat and dairy infant formula, as case studies</p>
<p>Training related to one of the threats: (i) microbiological, (ii) chemical, (iii) food fraud</p>	<p>Food fraud and food safety</p>
<p>Specific expertise/competence of the organisation relevant to the training topic:</p>	<p>FERA Science delivers technology-driven food transparency and raise the bar on standards and regulations in place to mitigate the risk of food fraud. The aim is to give the food industry protection based upon sound regulations and inspection methods, as well as help to give consumers confidence around the food that they eat.</p> <p>Globalised food supply chains give consumers access to a huge variety of foods, though buyers are becoming increasingly aware of, and considerate of the sourcing and authenticity of the products they choose to buy. Economically motivated food fraud is now a major concern for both the food industry and regulators across the globe.</p> <p>Food safety specialists at FERA Science are continually investigating new ways to provide early warnings of emerging risks and mitigate the risk of food fraud occurring at any point through the food chain. Much of this innovative work is based on non-targeted chemical and biochemical profiling of components in food samples. We use advanced techniques such as NMR spectroscopy, high resolution Mass Spectrometry and Next Generation Sequencing coupled with advanced 'big data' analysis.</p> <p>FERA Science has developed an Early Warning System (EWS) prototype, a tool demonstrating how technology is bringing to the market cost-effective proactive</p>

	<p>methods to detecting fraud. This will look to alert you to developing issues from across the world – giving you a chance to introduce mitigation procedures before a crisis develops.</p> <p>Link to website: https://www.fera.co.uk/our-science/active-r-and-d/eu-and-defra-projects</p>
Duration (days):	2 days
Starting date:	Year 2021, date of training will be specified at the beginning of 2021
Capacity (no. of trainees):	Max. 20
Knowledge of trainees required for offered training: (i) beginner, (ii) intermediate, (iii) advanced	Beginner, Intermediate
Venue of the training:	Fera Science Ltd, UK



Annex II: Application form for participation in the EU-China-Safe training and scientist mobility program



APPLICATION FORM for participation in the EU-China-Safe TRAINING AND YOUNG SCIENTIST MOBILITY PROGRAM

Fill in your details

Mr/Mrs*	Academic title*
<input type="text" value="Mr./Mrs."/>	<input type="text" value="Select title..."/>
Given/first name*	Family/last name*
<input type="text"/>	<input type="text"/>
Institution/Organization *	Department*
<input type="text"/>	<input type="text"/>
Street*	Town*
<input type="text"/>	<input type="text"/>
Postal code*	Select Country*
<input type="text"/>	<input type="text" value="Select country..."/>
Phone no. *	E-mail*
<input type="text"/>	<input type="text"/>

IMPORTANT NOTE: After submission of the application form do not forget to send us also your CV at euchinasafe@euchinasafe.eu, with the email subject: Application for training program – name and surname of applicant. Europass format of CV is preferred, 4 pages in maximum (<http://europass.cedefop.europa.eu/documents/curriculum-vitae/templates-instructions>).

AREA OF INTEREST

Please indicate the training you are interested in; only 2 options are allowed! If you will mark more, you will be disqualified from the evaluation of submitted applications.

For description of individual trainings see the list [HERE](#). Check also experience of trainees that is required for participation in individual trainings!

ANALYTICAL METHODOLOGY CONCEPT (list of offered short-term trainings)

- Spectroscopy
(at Institute for Global Food Security, Biological Sciences, Queen's University Belfast, Belfast, UK)
- Analytical strategies for multi-analyte / multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids
(at University of Chemistry and Technology, Prague, Czechia)
- Analytical approaches to detect wine fraud
(at Federal Institute for Risk Assessment, Berlin, Germany)
- Rapid, microwave-assisted analysis of eight bound nitrofurans residues in meat
(at Teagasc Food Research Centre, Ashford, Dublin, Ireland)
- Training in whole genome sequencing (WGS) and analysis of genomic data
(at the University College Dublin, Dublin, Ireland)
- Use of reference materials and the estimation of measurement uncertainty
(at European Commission Joint Research Centre, Geel, Belgium)
- Analysis of POPs in food by GC-MS/MS for regulatory compliance
(at Fera Science Ltd, York, UK)

COMMODITY/OTHER CONCEPT (list of offered short-term trainings)

- Food fraud vulnerability assessments
(at Wageningen University & Research, Wageningen, The Netherlands)
- Introduction to the socio-economics of food fraud and food safety
(at Fera Science Ltd, York, UK)


YOUNG SCIENTISTS MOBILITY for both concepts (list of offered scientist training mobilities)

- Advance Mass Spectrometry
(at Institute for Global Food Security, Biological Sciences, Queen's University Belfast, Belfast, UK)
- Analytical strategies for multi-analyte / multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids
(at University of Chemistry and Technology, Prague, Czechia)
- Hyperspectral imaging
(at Wageningen University & Research, Wageningen, The Netherlands)

SUSTAINABILITY

Please describe how you will ensure knowledge transfer / sustainability of provided training (max 2000 characters)*

No more than 2000 characters, (2000 characters remaining)

Nejsem robot 
reCAPTCHA
Cognitive services - 5mluvni@postny.cz

Submit

*marked fields are mandatory

The Personal Data Controller is the University of Chemistry and Technology, Prague, IČO (Company Identification Number): 60461373, with registered office at Technická 1905/5, 166 28 Praha 6 (hereinafter the "Controller" or "UCT Prague"). More details can be found [here](#).



Annex III: List of applications for participation in the EU-China-Safe training program

Institution/Organization	Town	Country	SUSTAINABILITY (as submitted by applicants in the training program)
American Institute of Baking	Thessaloniki	Greece	AIB International is a well known certification body, training institute with global clients offering a wide range of food safety and integrity services. Food fraud is a key topic in the agenda of the internal trainings we have with our staff and also with our clients.
Kappa Konsulting Services ltd	Sandanski	Greece	Our Consulting company works with many companies to the field of food safety and integrity consulting, second party auditing and training. We also work with GFSI certification bodies as contractors for food safety audits and trainings. Food fraud is a topic we include both at the consulting/ training projects and audits to all our clients and especially the global accounts we work with.
INTERNATIONAL ATOMIC ENERGY AGENCY	SEIBERSDORF	Austria	In the Agency, we used to train fellows and interns on different aspect of analytical methodology on detecting food contaminants including food authenticity and traceability. We also provide training to Member State Lab participants on QA and QC measures on analytical procedures, which is not limited to handling equipment (with some troubleshooting) and data analysis. Visiting scientists also get help from us for specific topic they wanted to be trained on. Therefore, I am in a good position to impart the knowledge I will gain from this training in case I will be given a chance to participate.
Universitas Gadjah Mada	Yogyakarta	Indonesia	I am a junior lecturer in one of state university in Indonesia. As a lecturer, we are inherently of a professional nature and are ranging. They include direct teaching, tutorial guidance to students' learning, research and other forms of scholarly activity, curriculum development, educational management and administration, participation in the democratic processes of the institution (committee membership etc.), participation in quality assurance procedures. We have three main important task in education, research and also community service Indonesia is one of developing countries that are still facing several issues, especially food security and food safety and we also have a challenge in waste management program. Double burden malnutrition is one problem where Indonesia is facing now and correlated with the food security and food safety term. Food security and food safety are two key points which contribute to prosperity in one nation. Food security refers to the availability of food and one's access to it. A household is considered food-secure when its occupants do not live in hunger or fear of starvation. Food safety is a scientific discipline describing handling, preparation, and storage of food in ways that prevent foodborne illness. This includes a number of routines that should be followed to avoid potentially severe health hazards. Food can transmit disease from person to person as well as serve as a growth medium for bacteria that can cause food poisoning. As one of developing countries, we still have to give so much effort for food security and food safety in our nation. There are several issues also related to food authentication in Indonesia. I really interest to join the short training program I hope that I can enhance knowledge in this field to support how to face the research question in selected topics especially in the area of food authentication. By joining this research stay, I hope that I can broad my knowledge regarding several aspect.
Universiti Sains Malaysia	USM	Malaysia	The strategy to ensure knowledge transfer and sustainable can be started by identifying the training deliverables, which need to be updated frequently. These deliverables will be categorized based on their importance and the frequency of revision will be depending on that. In addition, all the training programs and their deliverables will be recorded in a maintenance inventory spreadsheet in order to provide a tracking mechanism throughout the years.

			<p>This inventory will provide access for all levels of training to identify the most desirable teaching programs and to rule out those which are no longer in demand based on the department goals and resources. The department should also proactively re-develop or re-design a multitude of training programs in order to suit the current needs and requests according to the internal and external reviews. By following through the plan, completing the assigned updates as scheduled, and implementing the training program in alignment with these consistent practices, it will serve to reinforce the value of the learning function by delivering better training. Apart from that, the training should be conducted in a small group of trainees in order to make sure the knowledge is fully transferred. Also, the trainees could also pick up the role as a trainer when they go back to their institution/countries. It is also to encourage to have good collaboration with the trainees after the training given. This scenario will also expand the training scope and scale at different locations.</p>
Agricultural University of Georgia	Tbilisi	Georgia	<p>I was an intern in Lugar Centre where I had opportunities to get theoretical and practical knowledge about PCR and genome research. I was taking part in the isolation process of DNA and RNA from different samples. In the frame of my doctoral thesis, I work on lactic acid bacteria and yeast in fruits and their beverages. Based on my individual plan I need to identify microorganisms' strains as well.</p> <p>According to regulations of Georgia pesticide residues, mycotoxins are controlled in fruit and vegetable. This rule obligates me to check this parameter during my research.</p> <p>On the other side, a State laboratory of Agriculture satisfied ISO 17025 accreditation requirements in 2014 of March which needs to renew. For this purpose, at the initial stage should prepare the staff and environment.</p> <p>We have also several Research Institutes and Centers at the Agricultural University of Georgia such as the Institute of Horticulture and Institute of Molecular genetics (http://agruni.edu.ge/en/research). Accordingly, we are rich with experienced specialists but we are missing such kind of training or workshops where we can gain new practical skills. That's why they are essential to us.</p> <p>I have experience in teaching. At my work, I use different methods to make easy studying processes to students and assist them to improve laboratory skills. For the transferring knowledge, first of all, we need the right audience who finds an interesting issue in the training and who has motivation listening to you. One of the most important parts is the method, how we are going to share our experience.</p> <p>I prefer holding some conferences or seminars in target groups which are working exactly on the same problem. Presentations are good for verbal communication but to make more memorable the material we need several case studies and role-playing. The theoretical knowledge will help the specialists to implement practical ways locally and internationally.</p>
University of Central Lancashire	Preston	United Kingdom	<p>I hope to share the knowledge gained from the workshops using Webinars (Adobe Connect) with current MSc in Food Safety Management students and via my University's social media platform. I've also recently received funding from the Knowledge Exchange (HEIF and Industry Strategy) grant from the UK government to develop the Food Fraud Prevention and Management – An Online CPD Programme. The CPD could be used as a platform to deliver the know-how on food fraud vulnerability assessments and the socio-economic impact of food fraud. I would also distill the ideas from these workshops and together with other trainees form small collaborating groups to work on future</p>

			<p>projects. Studies conducted post-workshop will serve as key indicators of the effectiveness and sustainability of the training provided. For example, I've previously attended the 'Data collection and analysis methods in consumer research' at FiBL, Frick, Switzerland and was trained by Robert Home and Hanna Stolz. Due to the training I was able to utilise the training in my small grant application on 'Chinese consumers' risk mitigating strategies against food fraud' and was successful. The grant has enabled me to share the works from FoodIntegrityEU and hopefully the opportunity to attend the trainings offered by Wageningen University and FERA Science could continue the knowledge transfer and future sustainability of the trainings provided.</p>
National University of Córdoba	Córdoba	Argentina	<p>Nowadays there is a lack of awareness in consumers in the matter of food authenticity. In this sense, my Ph.D. thesis is involved, working with chia, flax and sesame seeds in order to assess their authenticity in bakery products through HPLC-MS/MS, GC-MS, and NMR (Metabolomics workflow). In my research group, scientific fellowship and creating bonds with colleagues from all over the world are much promoted. At this point I will become the transmitter of information for my colleagues in Argentina, being the bridge between knowledge and them. On the other hand, I have access to the top-level methodologies mentioned here in Córdoba in our research group, this ensures that the knowledge acquired in the training course will be applied and it will be completely useful for the development of my thesis work, which goals are not only to shed light on the authenticity issue of food products but also to improve the nutritional quality of them through the bioactive molecules present in these seeds.</p> <p>Moreover, chemometrics and machine learning constitute both critical tools that go together with analytical techniques in order to deliver better and more accurate results. The knowledge transfer will not only allow the techniques involved and/or the analytical techniques involved in the program but also the introduction/reinforcement of knowledge related to this area of data analysis which should be known and learned by fellows in the university and research groups from abroad with whom we keep in touch constantly.</p>
Institute of Food Science and Technology Córdoba (ICYTAC)	Córdoba	Argentina	<p>Nowadays, I am working on one of the strategic topics in my country (Plan Argentina Innovadora 2020), applying different technologies to whole wheat flours (enzyme pre-incubation, fermentation with sourdoughs and sprouting) with the aim to improve the technological and sensorial quality of whole grain breads. As is well known, the intake of whole grain foods is encouraged by many organizations in the world such as the USDA and the WCFR due to its beneficial effects on health. However, this trend leads to food fraud.</p> <p>In our research team, the use of scanning electron microscopy (SEM), confocal scanning microscopy (LCSM) and polarized light microscopy to observe the microstructure of different food matrix and how different treatments modify them is very common. However, the type of analysis we carry out is not very deep and has not been aimed at detecting food fraud.</p> <p>I consider hyperspectral imaging and food fraud vulnerability assessment training, a great step to fulfill my academic and scientific formation. I would like to gain experience in using techniques that will help me to acquire wider knowledge in food quality and food fraud. The training program could provide me useful tools for the development of my current research. Also, it would give me a different perspective to create new projects and to spread our lines of research. The opportunity to be in contact with great researchers at Wageningen University would be a great honor.</p>

			My participation in the EU-China-Safe TRAINING AND YOUNG SCIENTIST MOBILITY PROGRAM not only will going to be useful to me, instead, it will facilitate to transfer the set of knowledge and skill acquired to my colleagues here, in Argentina. Furthermore, there is the possibility of strengthening the relationship with other institutions and food industries throughout the develop of new projects and training programs in the future.
Agricultural University of Tirana	Tirana	Albania	<p>I selected to apply in two courses; short course: "Analytical approaches to detect wine fraud", and young scientist mobility "Analytical strategies for multi-analyte/multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids", because my area of interest is food fraud and my PhD thesis was on honey authenticity. The reason which I selected these course is based on the fact, first that I want to expand the knowledge on wine authenticity, due to is one of most adulterated food products, and in my country (Albania), actually in my knowledge there is no official control based on chromatographic methods and there is no IRMS equipment in official lab and private ones. These new methods are today the state of the art in detecting wine fraud (and other food products). With this training, I will be well "equipped" with the best knowledge and to work with official stakeholders to promote and share information related to the novel techniques to detect wine fraud and other food products.</p> <p>The next training on "Analytical strategies for multi-analyte/multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids", I decided to apply to expand my research on honey. I have been dealing with honey authenticity (in terms of composition and botanical origin), but nowadays in Albania (but not only), there is an enormous work to screen for residues in honey, due to the decline of bees called CCD (Colony Collapse Disorder). Actually, honey from Albania is not allowed to be exported in EU, due to the contamination with chemical residues. With these training I will expand my research, which will be crucial to work with official authorities to implement and work with EU stakeholders to be possible that honey from Albania can enter the EU market. Also, a good work will be in collaboration with Beekeepers Association to promote the best practices and share knowledge of substances banned in treatment of bee diseases and the toxicity of alkaloids.</p>
Wageningen University and Research	Wageningen	Netherlands	<p>Food Safety is a global issue which affects the healthy development of the whole world. As the PhD candidate in Food Science, I devoted myself to study food authenticity, quality and identification. Therefore, after the training, I will transfer the knowledge to more and more people to make sure the most values of the training content. My plan and sharing form are as follows.</p> <ol style="list-style-type: none"> 1. Writing a summary about what I learn and experience. Taking Spectroscopy as an example, the summary may include background, the theory of vibrational spectroscopy and chemometrics, the advantages and disadvantages of different equipment and how to build robust models. A good form can learn from the website (https://foodsmartphone.blog/). I suggest everyone who attends the program can write a blog. 2. Making a PPT based on the above summary for holding a seminar. When I am back to Netherlands or China. I can share the knowledge which I learn in our research group. The most important thing is that we can use the learned skill to fix many problems that we will meet in our experiments or projects. 3. If the condition is allowed, a Vlog should be recorded and show what I experience during the training process. The new media can be adopted to help students, stakeholders and consumers to easily understand the concept of food

			<p>safety and protection methods.</p> <p>I firmly believe that only knowledge transfer can create greater power to solve problems.</p>
Wageningen University and Research	Wageningen	Netherlands	<p>As a phd student in the food fraud period, I think the training titled "Spectroscopy" is suitable for me. It is a good way for me to understand the application of all kinds of spectroscopy in the food fraud and geographical origin. After this train, I will write a Training summary to review the knowledge I have learned about theory and labwork in Spectroscopy. By this summary, my colleague can understand the research progress, especially in the field of food authenticity. In my group in Wageningen, we have Regular academic colloquia, supervisors, Ph.D., master students all have the opportunity to participate. Introduction and discussion of new technologies applied to our subject will be a good choice.</p>
China National Research Institute of Food and Fermentation Industries	Chaoyang District, Beijing, China	China	<p>The need to provide safe food for the consumer and efficient food safety controls between EU and China has never been more important. As the EU-China-Safe consortium member, we plan to develop a cost effective state-of-the-art, big data driven advanced digitally enabled food safety risk monitoring and control system. Considering most of the Food Business Operators in China are microbusinesses, lacking enough time, money, resources and technology to install elaborate food safety systems, there still have a long way to achieve the objectives. Thus, we need to learn advanced technology about food detection, data analysis and transfer from Europe.</p> <p>If I have Opportunity to attend the training program, I will cherish it very much. Before attending the training program, I will be prepared to learn more academic knowledges. I will improve my practical ability and my theoretical knowledge by watching more professional videos, reading more theoretical books, experimenting frequently in advance. When I go abroad. I will take notes, summarize what I have learned and write it down every day.</p> <p>After attending the training program, I will share experiences and knowledge with my partners and use technology that I have learned in Europe to do further research which is closely related to our project, including explore providing dynamic food safety risk profiles of food ingredients and products, building domestic big data base and providing related decision support to a range of end-users. In addition, I will make comparisons of method with European partners to ensure the consistency of the method. I will keep close touch with European partners to share findings and outcomes to improve multi-national cooperation and achieve together progress. Finally, I will write at least two academic paper to introduce the wonderful technology and its huge potential application in food safety risk monitoring and control in China to the public.</p>
China National Research Institute of Food and Fermentation Industries Co., Ltd	Beijing	China	<p>Hongwei Yue majored in food fermentation and received her Master degree from China National Research Institute of Food & Fermentation Industries in 2017. After graduation, she stayed in National Center of International Research on Food Authenticity Technology (NCIRFAT) as an independent researcher. Her work covers the development of food authenticity stable isotope technology, food authenticity standard revision and detection methods of food adulteration. She has published six scientific papers and two invention patents and drafted two National Standards and one Industry Standards.</p> <p>So far, Hongwei Yue has anticipated several international programs and National Key R&D Program, such as the EU Horizon 2020 and the FOOD INTEGRITY FP7 and International Cooperation Program of Ministry of Science and</p>

			<p>Technology. These experiences enable her a rich knowledge in academic communication and global cooperation in food science.</p> <p>NCIRFAT is the first research institute in China that specialize in food authenticity, traceability and standards. The centre has two analysis laboratories: Food Analysis using Nuclear Magnetic Resonance laboratory and Food Analysis using stable Isotope Technique laboratory (FAIT).</p> <p>Founded in 2010, FAIT has conducted extensive research into the authenticity and traceability of beverages, wines, juices, dairy products, honey and vinegar. FAIT is equipped with two modern stable isotope ratio mass spectrometry (IRMS), as well as an off-line gas pre-treatment system and five on-line apparatus. Following the research hot topic at home and abroad, FAIT has developed more than ten kinds of analysis methods and established a public service platform for scientific research. The laboratory participated in the FIT-PTS inter-laboratory proficiency testing project sponsored by the European Union for five times and received international recognition.</p>
Czech University of Life Sciences	Praha	Czech Republic	<p>I work as a researcher at the Czech University of Life Sciences in Prague, Department of Food Sciences. My expertise is food safety, development of new and safe preservatives and pesticides of natural origin, their analysis (GC, MS, MALDI, NMR), extraction and palliation in food. I involved in the subject of "Food safety and certification", where passed by 60-90 students per year. I will be happy to forward my knowledge to my students and use it in my research activities. I am also involved in the project of large research infrastructures METROFOOD-RI and METROFOOD-CZ. Our department is involved in the Nutrisk Center project and we have got the European ERA Chair project.</p>
Central Testing Laboratory of Alcoholic/Non-alcoholic Beverages and Canned Products	Chisinau	Moldova	<p>Our enterprise has a rule according to which an employee attending any training or workshop submits a report to the management about course usefulness and acquired personal skills and presents another report usually in the form of a presentation to colleagues of the corresponding unit. At a horizontal level (among the colleagues), I will disseminate acquired knowledges and skills by organizing a presentation for interested specialists in the testing laboratory. Possible discussions will help to develop an approach to the implementation of the best European practices in the field of wine quality control. As a part of the management team of the testing laboratory I can also directly influence to decisions of the high management of the enterprise regarding implementation of analytical approaches to detect wine fraud, implementation, validation and quality assurance of the new testing methods. Top management, in its turn, can offer to our founder (National Food Safety Agency) to implement relevant legislative standards or amendments to existing technical regulations. An in-depth study of the quality control approaches applied by Senior Expert Office for the Import Control of Wine will help in identifying the necessary steps to achieve the improvements required in our national control system of wine. Thus, acquired knowledge will be used into the planned revision of the official control system.</p>
AFRD	Tbilisi	Georgia	<p>Modern agriculture is extraordinarily efficient and productive, but it has also taken a toll on our planet. The systems that keep our Farmers and supermarket shelves full also lead to habitat destruction, species loss and significant greenhouse gas emissions. And the balance between food security and environmental protection is only going to get more difficult as the global population continues to grow.</p> <p>Evictions have emerged as the most common housing, land and property risk globally associated with the COVID-19</p>

			<p>pandemic in spite of the fact that access to adequate housing is essential to reduce the spread of the virus. These risks of evictions arise due to a combination of factors, the main one being the suspension and loss of livelihoods on a massive scale resulting from public health prescriptions resulting in an inability to pay rent. Opportunistic actors (governments, armed groups, and landlords) may also use this crisis to evict people from houses, camps and informal settlements. Lastly, evictions are also a major risk for public health workers and others who risk exposure as a result of their professions, people who have been infected by the disease, and other marginalized populations due to stigma and fear. The COVID crisis has millions of people on the move, and tens of thousands stranded far from their homes. Most notably, as economies shut down and lockdowns proliferate, de-urbanization has emerged as a serious challenge throughout the developing world. As people leave cities they are leaving properties behind, which creates a range of challenges, such as how to ensure their properties are not taken over by others, whether they be developers, government agents or squatters. Re-integrating this mass of people into rural communities presents another serious challenge and may lead to a rise in conflicts. What are the dispute resolution activities we should be thinking about today? Another emerging challenge is related to the question of remittances.</p>
Indonesia FDA	Jakarta	Indonesia	<p>I work for Government Authority which have responsibility to ensure food safety and secure. Indonesia Food and drug authority have a broad catchment control area in 34 provinces with more than 250 million people of Indonesia. We have national program in order to improve public protection from the circulation of illegal Drug and Food, Indonesia FDA together with other other authority like Indonesian National Police [POLRI] keep endeavoring to find and crack down criminals regarding illegal Drug and Food circulation. It is important to us moving fast because of significant changes on the pharmaceutical, Indonesian traditional medicine, food, cosmetic, and medical device industries. Those industries are able to produce a large-scale of products in wide range and with support of technology advancement in transportation and borderless entry barrier in global trade, those products can be quickly spread all over countries and another continent through a wide distribution network and accessed by all levels of communities. Capability to detect, prevent and control such products important to protect the consumers security and health in the country and overseas. Therefore, Indonesia FDA is established a national and international networking, authority to conduct law enforcement and highly credible professionalism. With my current position as an expert make an easier access to to transfer improved knowledge to all stake holders and my background study in food authenticity make this program is on the track, I will improve food science role in my institution to solve the problems especially in food crime and make an international relationship that will give benefit in the future.</p>
Kenya Plant Health Inspectorate Service	Nairobi	Kenya	<p>Pesticide residue analysis and mycotoxin analysis has become a many concern in our country and major labs and official control labs are now starting to carry out this kind of analysis. Many labs are adapting methodologies from other institutions but still the main major concepts might be missing. Analysis of POPs in food using GCMSMS for regulatory compliance has not been done by our organisations, being very conversant with operations of GC MSMS this training will be of great help as it will be a spring board on establishing the new kind of analysis in our organisation. This training is very key in ensuring that the analysis that we are doing meets the internationally accepted procedures. I will ensure knowledge transfer and planning a training at my organisation with my colleagues and other analysts who carry out official controls using the techniques. On sustaining the knowledge, with the help</p>

			of the organisation's management i will implement the new approaches trained and use the new methodologies which we shall validate and have the methods accredited for use.
Cairo University - Faculty of Agriculture	Giza	Egypt	I am an associate professor at Cairo university so, I will teach the new knowledge and Skills to my postgraduate students. Also, I am a supervisor for MSc. and Ph.D. students and transfer this new information to them. currently, I am a researcher at Guangxi Buffalo Research Institute, Chinese Academy of Agricultural Sciences, Nanning, China. Therefore, I will transfer the new knowledge to Chinese members as well as the Egyptian members.
Wageningen University and research	Wageningen	Netherlands	My current project is about milk authenticity and fraud mitigation. I am interested in food integrity topic. In our group we have symposiums frequently, we communicated about food integrity and I am willing to share with them about the new skills/techniques or conception I would get from the training program. In addition in my project, I have close contact with master/bachelor students and most of their study were about food authenticity. I can transfer the knowledge to them during the daily talks. I would also give a presentation to spread the knowledge.
National University of Córdoba (Argentina)	Córdoba	Argentina	Due to the increasing interest from consumers on geographic identity and quality of food, there is a need of developing authentication tools, to guarantee that the origin specification is correct. The stable isotope analysis technique is becoming a key technology in Argentina, so more people with training on this methodology are needed. Within the context of my PhD. I worked with stable isotopes in wine, fish and dairy products in order to ensure their geographic origin and authenticity. I completed two internships in Austria (Wieselburg) working on this topic and I participated in the Food Integrity Project training program about IRMS Theory and lab fruit juice and wine. These experiences were very significant for my professional career. I would really like to continue training my skills in the use of IRMS with experienced people since we are getting one of this equipment for our laboratory, the third in the country for research and services .The participation in this course will also benefit my colleagues, who will learn to integrate this technique into their field of application.
University of Chemistry and Technology Prague	Prague	Czech Republic	The different workplace experience and newly learned knowledge extending my own expertise will be beneficial in my personal and professional development and participation in this project will definitely improve my research work (by getting new perspectives) and will help with finishing my dissertation thesis (Application of gas chromatography coupled with high resolution mass spectrometry in food and environmental samples analysis), which is thematically close to my chosen training courses. The information learned during the training will be furthermore presented at Department of Food Analysis and Nutrition regular seminar. These seminars are focused mainly on troubleshooting occurring in analytical laboratory and these lectures are widely attended other doctoral students and pedagogical employees. Working group is engaged (besides other activities) in analysis of environmental contaminants in food, which is done using validated methods. Use of reference materials is one way to validate such procedures, therefore the transferred knowledge by lectures on these seminars will be beneficial for the whole team.
University of Chemistry and Technology Prague	Prague	Czech Republic	I expect from the internship to gain new experience and knowledge, which I will use in my scientific and pedagogical activities. Especially in the development of the latest analytical procedures for the determination of POPs in food and the environment. I will use the newly acquired skills in food quality research on the Czech and world market. I believe that after completing the internship I will be able to pass on knowledge to other members of the EU-China-Safe program. This takes the form of training targeted at different stakeholder groups.

Safe Food Consulting LTD	Chengdu	China	<p>I have been working in the food industry for more than 15 years and have rich experiences in different sectors of the food supply chains in China, including farms, food manufacturers, retailers and caterings. I know well about the real food safety risks, challenges and situations in China. I have helped thousands of small and intermediate food companies in China to establish their food safety programs, conduct the ingredients risk evaluation, lead the food safety audit/inspections and provide training to managers, supervisors and even front line food handlers. Through this short-term trainings, my goal is to enhance my knowledge and skills in some advanced technologies in tackling the food fraud and food safety issues, such as using WGS to identify the pathogens or using some analytical methods to detect the fraud activities. After the training, I will still work with the small and intermediate food companies in my country to help the industry to improve their food safety management levels. For example, I can provide these advanced trainings, programs and resources to the food companies to reduce their food fraud risks and foodborne illness in order to protect the health of the people.</p>
University of PGRI Semarang	Semarang	Indonesia	<p>My job is as a lecturer in the department of food technology at PGRI University in Semarang. The fields of knowledge that I teach related to food chemistry, basic instrumental analysis, waste management and organic chemistry. My research roadmap related to biopolymer technology, waste management and identification of marker compounds. Currently I have just completed my doctoral study in the department of food science in Faculty of Agricultural Technology, University of Gadjah Mada. I have completed my doctoral program for four years. My final project and research take the theme of evaluating physical properties and antimicrobial potential of bioplastics. In my research, I used the ¹³C NMR and FTIR instruments to perform data analysis. I used spectroscopy instruments related to identify marker compounds in nyamplung cake extract and also bioplastics that I have made. Based on my research road map, I really need a broader knowledge of spectroscopic tools to support my research regarding the identification of marker compounds. Identification of marker compounds were related to the presence of marker compounds in biopolymers and food waste that can still be processed into materials that were more useful and have a higher selling value. I have a plan to continue my dissertation research related to waste management and biopolymer production, so I need a broader knowledge of spectroscopy to identify marker compounds that may be present in the material under study.</p> <p>Meanwhile, in activities related to my job, I really need training activities related to spectroscopy to improve the quality of knowledge for the students that I teach. It deals with courses in food chemistry, organic chemistry and the basis of instrumental analysis. In addition, research activities are also carried out in collaboration between lecturers and students that require the use of spectroscopic analysis to identify functional groups.</p>
OSOA FOODS	Lagos	Nigeria	<p>Nowadays, the ease of information or data transfer has been made even simpler by use of information technology. Among several means of information/ data/ knowledge sharing/ transfer is the use of Apps specially designed for ease of communication such as Google Hang Out, WhatsApp, Zoom Meetings, and so on.</p> <p>Other means maybe connecting through social media such as Facebook, Instagram, Twitter or LinkedIn to form a community for ease of communication and data sharing.</p> <p>Note that all the above has video for real time communication depending on time zone of individuals concerned. Another means of communication maybe through e-mail also in real time.</p>

			<p>All these when combined for knowledge sharing/ transfer makes communication effective and simple.</p> <p>On sustainability, we shall agree on number of days per week and hours of engagement that will be convenient for all which has to be consistent. Also at the beginning of a training, a recap of previous lecture given will be on course to refreshing all. We shall equally have assignments given on treated parts or sessions taken.</p> <p>Using the above plan, the objective of knowledge sharing/ transfer and sustainability of provided training will be achieved.</p> <p>Thank you.</p>
Fauji freshnfreeze	Awan town	Pakistan	Being a QA professional, I need these training to strengthen my knowledge on different risks and emerging challenges to food safety.
China National Research Institute of Food and Fermentation Industries Co., LTD	BEIJING	China	<p>The Department inspection center can detect a variety of products such as alcohol and beverage, and the test parameters cover many fields including pesticide residues, mycotoxins and plant alkaloids. The department participates in the preparation and revision of national standards and professional standards and the confirmation of inspection methods. LC/GC-tandem high resolution mass spectrometry (MS/MS, HRMS/MS), gas chromatograph, liquid chromatograph and other detection instruments, which can meet different detection requirements. At present, although the laboratory has established the detection method of pesticide residues, there are still some problems in practical application due to the imperfect detection equipment and the unsystematic detection method. After going to Czech Republic for exchange and study, I will share the technology and methods of detecting pesticide residues, mycotoxins and plant alkaloids in various matrices based on LC/GC-HRMS/MS to my department. I hope to be able to use advanced detection technology, systematic analysis method to solve the practical application of pesticide residues in our department, combined with the project of our department to carry out deeper research. I hope to improve and enhance the existing experimental design and data processing methods to improve the shortcomings, and provide more advanced technical and theoretical support for the formulation of various standards, so as to make the standards more feasible.</p>
International Development Organization LLC.	Dhaka	Bangladesh	<p>In Bangladesh, most of the foodstuffs, be they manufactured or processed, are unsafe for consumption or adulterated to varying degrees. This problem persists at every level of the food chain from preparation to consumption. Food manufacturers, processors, restaurants, fast food outlets, and so forth are all involved in one way or another in this corrupt practice of adulteration. Foods are adulterated by using various harmful chemicals and toxic artificial colors, on the one hand, and rotten perishables turned into poisonous foods are stored, sold, and served to consumers in an unhygienic atmosphere, on the other. Most of the people in Bangladesh, do not have adequate education or training on Food Safety, especially on Food fraud and adulteration. In different food safety projects in Bangladesh, different training activities were undertaken and technical support materials were developed for food businesses and assistance in the introduction of food safety management programs. But these were not sufficient for transferring the knowledge into root levels. However, after completion of this training, I will develop an overall learning transfer plan, including providing adequate time and resources for the 'trainee' to adapt their new learning into workplace behavior, and ensuring that learning is applied on the job, in an immediate way. In addition, it should be implemented tools and processes to reinforce the application of learning post-training,</p>

			measure if and to what extent learning is applied on the job, advocate for and provide full support and involvement by managers, directors, or partners in the training transfer process. Apart from these, also ensure that the classroom instruction approach simulates the actual work environment.
Aerial	Illkirch-Graffenstaden	France	<p>I am able to ensure knowledge transfer of provided trained thanks to my communication, organisation and managerial skills.</p> <p>I have gained oral and written communication skills through my PhD thesis, which included regular oral presentations, poster sessions, writing report and tutoring assignments.</p> <p>I had to give presentation to different public (student, technician, scientific, supervisor) in various contexts (international, scientific congress, internal presentation to supervisor, presentation to industry, ...) , so I have a great capacity to adapt to different audiences.</p> <p>During my PhD thesis, I also developed organisation skills by fully planning my work (bibliography, experiment, data treatment,...), planning NMR experiments between lab members and lab-meeting with co-workers.</p> <p>My current job gives me management skills by supervising student and co-workers from different level.</p> <p>Moreover, I have done a lot of physical and chemical characterisation of food products by spectroscopic methods.</p> <p>My knowledge on this subject will allow me to follow the training perfectly and therefore to pass it on to other people.</p>
Aerial	Illkirch	France	<p>Aerial is a private nonprofit research organisation, member of the French coordination association for the food industry (ACTIA). It is qualified as a Technical Institute for Food Industry (ITAI) and as a Technology Resource Centre (CRT) by the French government. It is also an IAEA collaborating center.</p> <p>Knowledge transfer to food stakeholders is one of Aerial's key missions and expertise. It will be ensured through the development of specific supports and the organisation of info days, workshops and training sessions for SMEs and other technical centers. The practical work will be carried out on Aerial's laboratories.</p> <p>Beside Aerial's own capabilities, training sustainability will rely on ACTIA's joint technological networks Aerial is member of. These national tools have the mission of ensuring dissemination of knowledge and skills related to the issues and stakes of the agrifood industry. They benefit from multi-year public funding to carry out this mission.</p>
UNIVERSITY OF CYPRUS	nicosia	Cyprus	<p>Food adulteration is an issue of major concern, as numerous foodstuffs and beverages do not follow their labeling. Adulteration of food products is a well-known phenomenon, and there are numerous published studies. I am a post-doc researcher at the University of Cyprus. My research field is in food chemistry, and especially in authenticity of dairy products by using spectroscopy (MIR and NMR) and chemometrics. I would like to gain more knowledge regarding spectroscopic techniques and multivariate data analysis, by participating in the training.</p>
Thammasat University (Rangsit Campus)	Khong Luang	Thailand	<p>Awanwee Petchkongkaew has started to work on mycotoxins since her Ph.D study (year 2002). She has more than 10 years-experiences in mycotoxins determination and the biological degradation and biological control of mycotoxins using natural substance(s), microorganism and agricultural waste products. Awanwee is one of the key researchers among not so many of them in Thailand who driven to solve the mycotoxins contamination situation in the country. Recently, Awanwee is a leader who is setting up ASEAN MYCOTOXIN RESEARCH NETWORK (MyASEAN) which aims to tackle and mitigate mycotoxin problems in this region in order to provide food and health security to</p>

			<p>the ASEAN, European and global consumers, which is one of Strategic Commons of Thailand Post COVID-19. The formation of an ASEAN network will play a critical role in address this issue by supporting the development of urgent and impactful strategies to help sample, monitor and detect food safety issues as well as issues such livestock performance which help underpin the economics of the region. MyASEAN contains 4 European collaborators from 4 countries and 5 ASEAN collaborators. MyASEAN consist of 7 work packages covering up-stream, mid-stream and down-stream which are: (1) Effect of climate change on fungal growth and mycotoxin contamination level in ASEAN agricultural commodities, (2) Detection of mycotoxins and emerging mycotoxin contamination in ASEAN agricultural commodities, (3) Innovative bioremediation approaches using Bacteria and agricultural wastes to reduce human and animal exposure to mycotoxins (4) Point-of-care multiplex detection of mycotoxins, (5) Bio-monitoring of mycotoxins exposure assessment in ASEAN region, (6) Capacity building for ASEAN students, and (7) Dissemination. Receiving the training program at IGFS, QUB, Belfast UK will absolutely help MyASEAN especially in WP 2 and 4. For this, you can ensure that knowledge from provided training will be transferred and sustained.</p>
Faculty of Agro-Industry, Kasetsart University	Bangkok	Thailand	<p>The occurrence of mycotoxins in agricultural commodities is a significant food and feed safety challenge. Thailand is located in a tropical zone and hardly to avoid fungal contamination in the crop. Recently, mycotoxin contamination affects a large number of raw materials and finished feed intended for animal production led to huge economic losses. A part of my doctoral dissertation focusses on the development of a novel adsorbent which proper to simultaneously adsorb for mycotoxin in the stable neutral complex without compromising nutrient adsorption. In our study, unmodified and acid-modified coconut husk were preliminarily tested for their ability to bind the mycotoxin and the surface properties. Acid-modified coconut showed high potential to be further developed and used in the livestock industry. The current research is a collaborative research project between 3 institutes; Kasetsart University, Thammasat University and Institute for Global Food Security, Queen's University Belfast, UK. Professor Chris Elliott, who my research committee, would kindly support both of techniques and research expenditures at Queen's University Belfast, especially in the part of the analytical performance of the highly sensitive LC-MS/MS based multi-mycotoxin method and multi-mycotoxin adsorption in simulated gastrointestinal digestion model. This is very important not only to make my research project success, but this knowledge would essence to facilitate myself to build up the safety through food and feed supply chain along my future career. The funding from EU-China-Safe training program would greatly support my expenses for travelling to do short research at Queen's University Belfast, expected to take place from March to May, 2021. Lastly, I hope this scholarship will support me to make this research project is a success along with obtaining knowledge through the international experts and widening my experience.</p>
Kwame Nkrumah University of Science and Technology	Kumasi	Ghana	<p>I will organize a 5 days workshop with support from my university within 4 weeks of arrival back home. The approach for the workshop with based on the pedagogical approach (applying on the spot what will be taught): problem based and active learning, participant centered, real lab work and focus on transversal skills. The knowledge to be acquired from this training fits into the current and future plans of my laboratory of been a center of excellence in food safety (mycotoxin, pesticides and food fraud analysis) in the food basket zone of Ghana. This knowledge will be important in designing better experiments, research and analytical services to meet the</p>

			<p>demands of the local food industry. It will also urgent teaching materials for teaching and hands-on training of students in my faculty. Research will include adulteration of honey, vegetable oil, spices, drinks and the non-destruction analysis of food components using the AT-NIR.</p> <p>Knowledge will be further transferred and sustained though the postgraduate students and technicians, I will be working with for my PhD thesis. My research thesis is focused on the risk assessment of multi-mycotoxin in food and its effect on the health of children under 5 years. The knowledge to be acquired will be combined with my problem-solving skills and interest in bioscience to gain quantitative and analytical skills for my research career.</p>
Kasetsart University	Bangkok	Thailand	<p>I am interesting to do the short-term training on Spectroscopy offered by the Institute for Global Food Security, Biological Sciences, QUB, UK. I am keen to learn especially the analytical spectroscopy instrument strategies for multi-analyses for trace food contaminants, i.e. mycotoxin, pesticide, toxicants produced during food processing in various food and feed matrix. This training would benefit to strength my expertise and knowledge to supervise one of my Ph.D. Student who is working on the development of the mycotoxin binder which is the collaborative project with QUB, UK. On the top of that, this hand-on training would let me in the right direction to set up the future food safety excellence research lab at Kasetsart University, Thailand which aimed to be the center to provide the services as well as the training on the multi-analysis of food contaminants using emerging technologies along food and feed supply chain in Thailand which is one of the kitchen of the world.</p>
FOOD AND DRUGS AUTHORITY	ACCRA	Ghana	<p>As part of my work I Conducts instrumental analysis of highly complex nature on product samples to ascertain efficacy and wholesomeness. Conducts complex test on products samples that require the use of precision equipment that generates hi-tech analytical reports for work performance. Ghana like many African countries has fragmented and poorly coordinated institutions with responsibilities for various aspects of food safety, the major recommendations was to develop human resource and an effective system for the detection of biological, chemical and physical contaminants in the food chain and to effectively apply risk analysis in the management of agri-business to ensure competitiveness and delivery of safe foods to the consumer. As a regulatory officer with the Food and Drugs Authority in Ghana, the enforcement of food standards is limited by resources for inspection, enforcement, and access to accredited laboratories that provide reliable food safety information. Inadequate modern techniques and equipment's for analyzing and testing food related products are a major limitation in our part of the world. Our laboratory has been ISO 17025 certified and requires competent people to work and achieve competent results. The above chosen courses would equip me with the latest analytical approaches, documentation and quality assurance processes needed to achieve accurate results. If I am admitted, I will apply my effort into achieving the following goals: Incorporate the knowledge acquired to my day to day laboratory work, Share the knowledge through in house training to other staff</p>



Annex IV: Request for contribution to cover T&S expenses associated with participation in the EU-China-Safe training program

Request for contribution to cover T&S expenses associated with participation in the EU-China-Safe Training program

Name of trainee:

Organisation:

Address:

Country:

E-mail:

Training activity (please select one of the options):

Short-term training:

Specific training to be added

Scientists' mobility:

Specific training to be added

Contribution to T&S expenses (please select one of the options):

- 1000 € (applicants for short-term training in European countries)
- 1500 € (applicants for short-term training in non-European countries)
- 2000 € (applicants for scientists' mobility)



FINANCIAL IDENTIFICATION

Bank account name:

IBAN:

BIC/SWIFT code:

BANK NAME:

BANK BRANCH ADDRESS:

Street name & number:

Town/city:

Postcode:

Country:

ACCOUNT HOLDER'S DATA:

Account holder legal name:

Account holder legal address:

Street name & number:

Town/city:

Postcode:

Country:

CONTACT PERSON OF THE ACCOUNT HOLDER:

Name:

Email:

Phone no.:

We certify that above information is complete and true.**Date & signature / stamp of the account holder**



Annex V: Certificate on participation in the EU-China-Safe training program

Prague, **date**

CERTIFICATE OF PARTICIPATION

in the

EU-China-Safe Training program

This is to confirm **Name Surname** from **Organisation, country** participated in the EU-China-Safe project training program.

Topic of the training: **To be added**

Training organisation: **To be added**

Date of the training: **To be added**

Monika Tomaniová
University of Chemistry and Technology, Prague
EU-China-Safe Training program coordinator



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 727864 and from the Chinese Ministry of Science and Technology (MOST).



Annex VI: Reports about individual training events in the EU-China-Safe training program

REPORT: EU-China-Safe training event

Title:

Spectroscopy

Dates: 24-28 January 2022

Organizer: QUB, Belfast, UK

Venue: on-site / QUB, Belfast, UK

Agenda of the training event:

See attached

One week training offering knowledge/experience of spectroscopy based screening tests and follow-up data evaluation.

Description of the training content:

Laboratory based and handheld based methods to detect the adulteration of many food ingredients and commodities were demonstrated. These are based on different forms of molecular spectroscopy (RAMAN, NIR, FT-IR). An important part of the work is the ability to develop robust and reliable chemometric models. During the training knowledge/experience of screening tests was transferred.

List of participants: 1 trainee



SHORT-TERM training - 'ANALYTICAL METHODOLOGY CONCEPT' – Spectroscopy

Queens' University Belfast – 24 – 28 January 2022

Programme

Day	Time	Activity	Person Responsible
Monday 24th January	Early Afternoon 1:30 pm – 2:00 pm	Welcome and tour of labs Meet QUB team	Dr Simon Haughey
	Afternoon 2.00 pm – 3.00 pm	SEMINAR - Introduction to use of spectroscopy in food fraud (TBC)	Dr Simon Haughey
	Mid Afternoon 3:00 pm – 3:30 pm	Synthesis of gold substrates for Surface-Enhanced Raman Spectroscopy (SERS)	Dr Natasha Logan
	Mid Afternoon 3.30 pm – 4:00 pm	UV-vis spectroscopy - Characterisation of gold nanoparticles (AuNPs)	Dr Natasha Logan
	Afternoon 4:00 pm - END	UV-vis and Raman spectroscopy - Catalytic gold nanoparticles for colorimetric nanosensing	Dr Natasha Logan
	Tuesday 25th January	Morning 9:00 am – 10:30 am	SERS (handheld Vs benchtop) - Application to caffeine detection (TBC)
BREAK 10:30 am – 10:45 am			
Mid-morning 10:45 am – 1:00 pm		Hyperspectral Imaging (HSI) – Application to chilli quality (TBC)	Dr Natasha Logan
LUNCH 1:00 pm – 2:00 pm			
Afternoon 2:00 pm – END		Introduction into NIR/FTIR and Handheld device Sample prep for analysis to be conducted for the next day.	Miss Holly Montgomery
Wednesday 26th January	Morning 9:00 am – 10:30 am	NIR/FTIR/Handheld Analysis of adulterated spice samples using spectroscopy-based techniques	Miss Holly Montgomery
	BREAK 10:30 am – 10:45 am		
	Mid-morning 10:45 am – 1:00 pm	NIR/FTIR/Handheld	Miss Holly Montgomery

		Analysis of adulterated spice samples using spectroscopy-based techniques	
	LUNCH 1:00 pm – 2:00 pm		
	2:00 pm – END	NIR/FTIR/Handheld Analysis of adulterated spice samples using spectroscopy-based techniques	Miss Holly Montgomery
Thursday 27th January	Morning 9:00 am – 10:30 am	Demonstration and Practical: Handheld Fluorescence and Infra-red Absorption for Fish Freshness Evaluation 9:00 am – 10:30 am	Dr Mike Hardy
	BREAK 10:30 am – 10:45 am		
	Mid-morning 10:45 am – 1:00 pm	Machine Learning/Chemometrics in R: Application to Spectroscopic Data	Dr Mike Hardy
	LUNCH 1:00 pm – 1:45 pm		
	Afternoon 2:00 pm – 3:30 pm	Applications of Spectroscopy	Dr Mike Hardy
	3:30 pm – End	Discussions/Q&A	Dr Mike Hardy
	Friday 28th January	Morning 9:30 am – 10:30 am	Commercialization of Spectroscopy based tests: The Bia Analytical Story
BREAK 10:30 am – 10:45 am			
Mid-morning 10:45 am – END		Final Discussions & Feedback	All

REPORT: EU-China-Safe training event

Title:

Analytical strategies for multi-analyte / multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids

Date: 17 February 2022

Organizer: VSCHT, Prague, Czech Republic

Venue: on-line

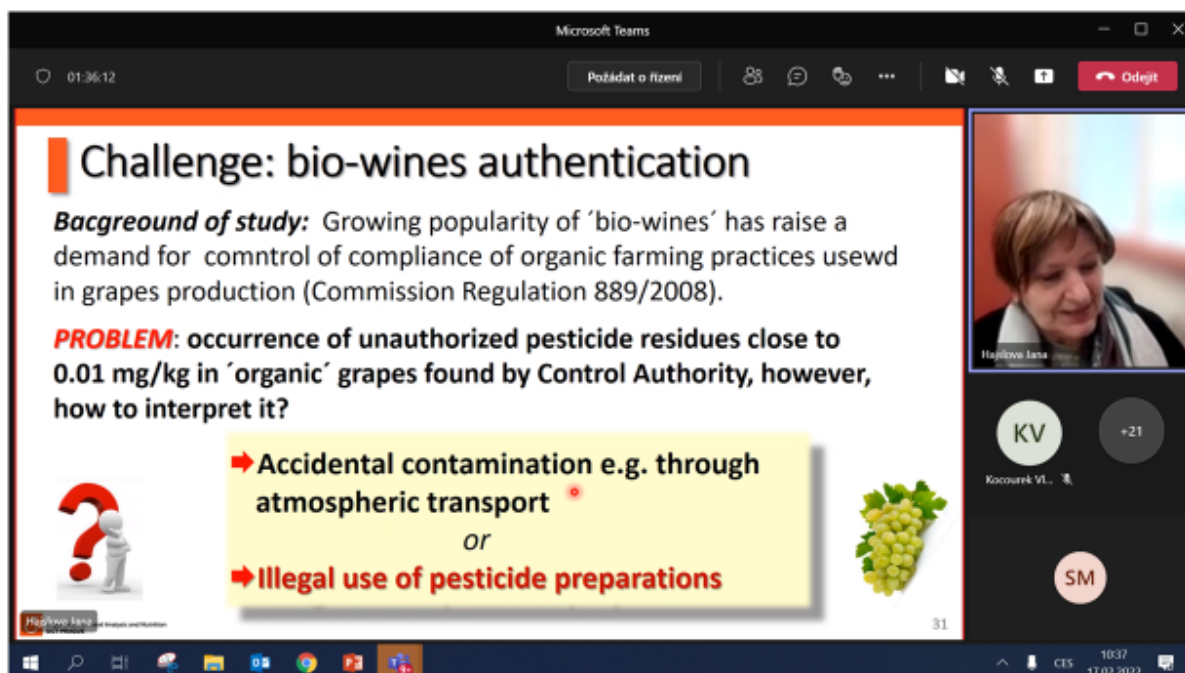
Agenda of the training event: see attached flyer

Description of the training content:

The virtual training on “Analytical strategies for multi-analyte / multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids” provided an insight into the method development and validation for pesticide residues, mycotoxins and plant alkaloids screening in various matrices using methods based on LC/GC - tandem high resolution mass spectrometry (MS/MS, HRMS/MS). Experimental design, various instrumental applications, data processing and interpretation, QA/QC and regulatory issues was discussed.

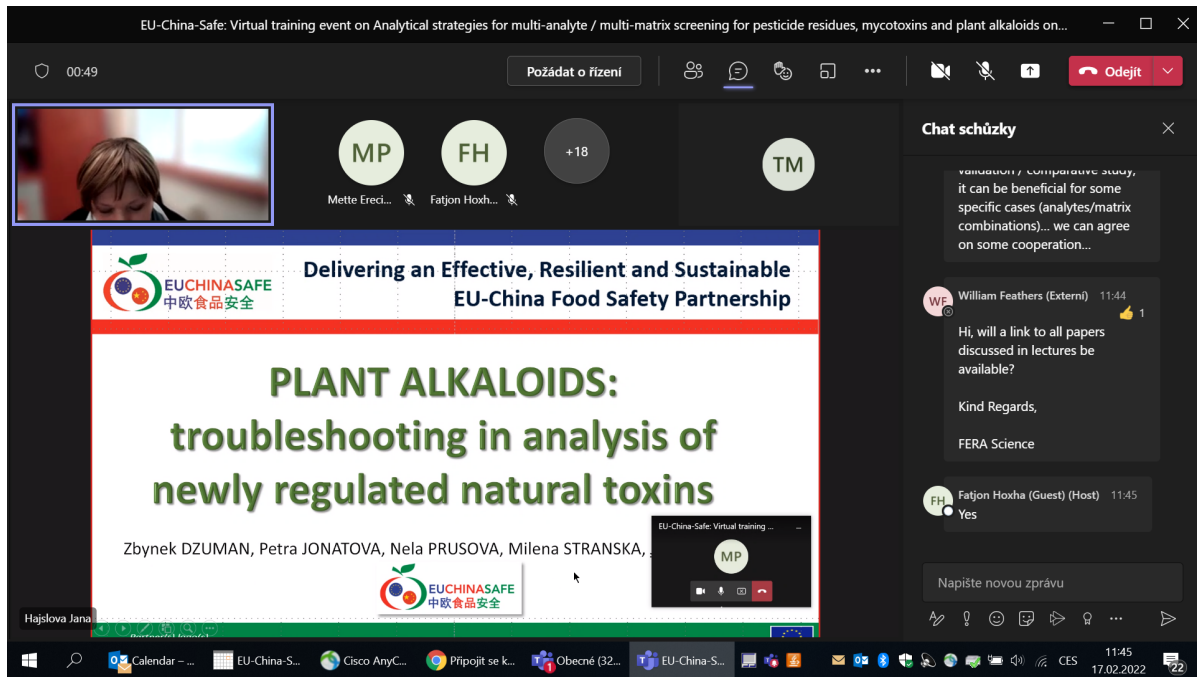
List of participants: 26 trainees

Photos:



The screenshot shows a Microsoft Teams meeting window. The main content is a slide titled "Challenge: bio-wines authentication". The slide text reads: "Background of study: Growing popularity of 'bio-wines' has raised a demand for control of compliance of organic farming practices used in grapes production (Commission Regulation 889/2008). PROBLEM: occurrence of unauthorized pesticide residues close to 0.01 mg/kg in 'organic' grapes found by Control Authority, however, how to interpret it?". Below the text, there are two bullet points: "Accidental contamination e.g. through atmospheric transport" and "Illegal use of pesticide preparations", separated by "or". There is also an image of a bunch of grapes. The meeting interface includes a video feed of a participant on the right, a toolbar at the top, and a Windows taskbar at the bottom.





EU-China-Safe: Virtual training event on Analytical strategies for multi-analyte / multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids on...

00:49

Požádat o řízení

MP FH +18 TM

Mette Ereci... Fatjon Hoxh...

Delivering an Effective, Resilient and Sustainable EU-China Food Safety Partnership

**PLANT ALKALOIDS:
troubleshooting in analysis of
newly regulated natural toxins**

Zbynek DZUMAN, Petra JONATOVA, Nela PRUSOVA, Milena STRANSKA,

EUCHINASAFE 中欧食品安全

Chat schůzky

validation / comparative study, it can be beneficial for some specific cases (analytes/matrix combinations)... we can agree on some cooperation...

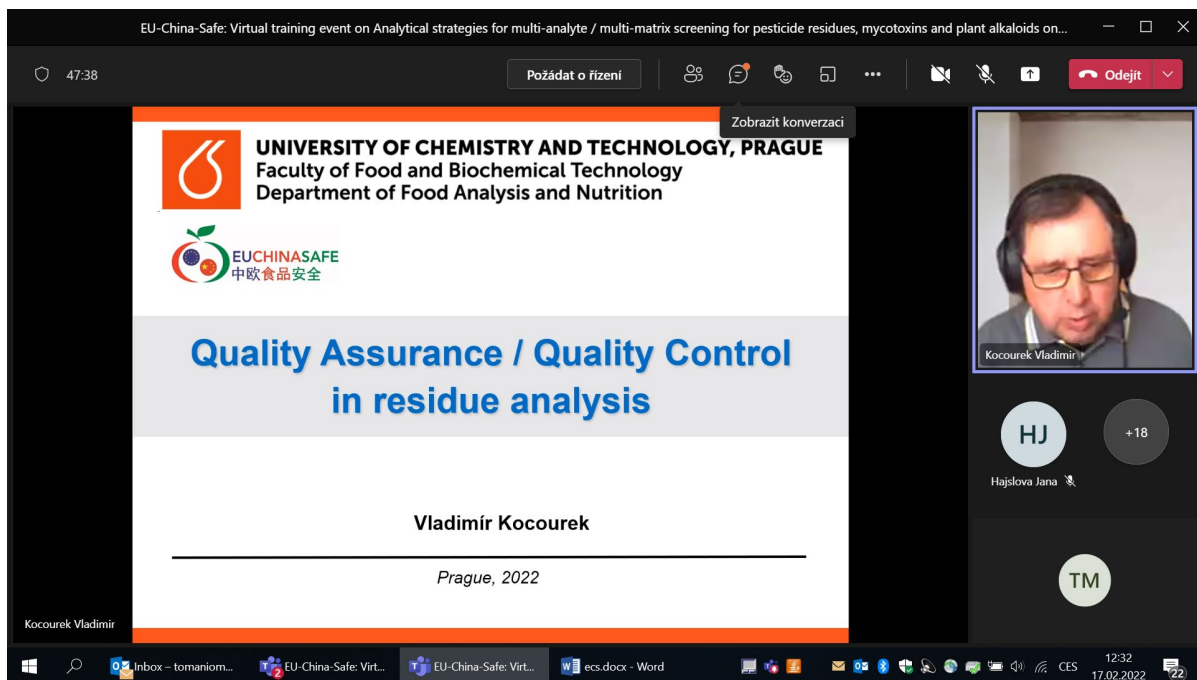
William Feathers (Externi) 11:44
Hi, will a link to all papers discussed in lectures be available?
Kind Regards,
FERA Science

Fatjon Hoxha (Guest) (Host) 11:45
Yes

Napište novou zprávu

Hajslova Jana

Windows taskbar: Calendar, EU-China-S..., Cisco AnyC..., Připojit se k..., Obecné (32...), EU-China-S..., 11:45 17.02.2022



EU-China-Safe: Virtual training event on Analytical strategies for multi-analyte / multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids on...

47:38

Požádat o řízení

Zobrazit konverzaci

UNIVERSITY OF CHEMISTRY AND TECHNOLOGY, PRAGUE
Faculty of Food and Biochemical Technology
Department of Food Analysis and Nutrition

EUCHINASAFE 中欧食品安全

**Quality Assurance / Quality Control
in residue analysis**

Vladimír Kocourek

Prague, 2022

Kocourek Vladimír

HJ +18 TM

Hajslova Jana

Windows taskbar: Inbox - tomaniom..., EU-China-Safe: Virt..., EU-China-Safe: Virt..., ecs.docx - Word, 12:32 17.02.2022





Analytical strategies for multi-analyte / multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids

VIRTUAL TRAINING EVENT

Date: 17 February 2022 | 9:30-12:30 (CET)



[REGISTER HERE](#)

The virtual training on “Analytical strategies for multi-analyte / multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids” will provide an insight into the method development and validation for pesticide residues, mycotoxins and plant alkaloids screening in various matrices using methods based on LC/GC - tandem high resolution mass spectrometry (MS/MS, HRMS/MS). Experimental design, various instrumental applications, data processing and interpretation, QA/QC and regulatory issues will be discussed.

All registered participants will receive a link for access in due time.

AGENDA of the training event:

9:30	Welcome and Introduction <i>Prof. Jana Hajslova, UCT Prague, Czechia</i>
9:40	Overview of legislation related to pesticide residues, mycotoxins and plant toxins, current situation, recent up-dates <i>Prof. Vladimír Kocourek, UCT Prague, Czechia</i>
10:00	Current practices and challenges in pesticide residue analysis <i>Prof. Jana Hajslova, UCT Prague, Czechia</i>
10:30	Analysis of regulated and ‘emerging’ mycotoxins considered for regulation <i>Assoc. Prof. Milena Stránská, UCT Prague, Czechia</i>
10:50	Plant alkaloids, troubleshooting in analysis of newly regulated natural toxins <i>Dr. Zbyněk Džuman, Prof. Jana Hajslova, UCT Prague, Czechia</i>
11:10	Refreshment break
11:30	Possibility to integrate analysis of pesticide residues, mycotoxins and plant alkaloids in a single multi-analyte / multi-matrix method <i>Prof. Jana Hajslova, UCT Prague, Czechia</i>
11:55	Quality assurance / quality control in residue analysis <i>Prof. Vladimír Kocourek, UCT Prague, Czechia</i>
12:20	Questions and Answers

REPORT: EU-China-Safe training event

Title:

Analytical approaches to detect wine fraud

Dates:

1 - 3 November 2021 (half-day each)

Organizer:

Federal Institute for Risk Assessment (BfR), Berlin, Germany
www.bfr.bund.de/en/

Venue:

ON-LINE course, pre-recorded presentations

Agenda of the training event:

The online training in wine authentication analysis was scheduled for November 1-3, 2021.

Narrated PowerPoint presentations covering the modules listed below were made available on October 29, 2021, for on-demand (asynchronous) viewing by participants.

In addition, on November 2, 2021, a web meeting was held, where participants could ask questions about the previously viewed presentations, and a second Q&A session was offered. Unfortunately, despite repeated messages to the participants in advance and after the training week, only one of them ever contacted us and participated in the Q&A session.

Description of the training content:

Topics were selected relevant chromatographic approaches and the analysis of stable isotope ratios (for the elements C, O and H) of wine. These ratios are used to determine e.g. the origin of a wine, but also to identify watering or the addition of beet or cane sugar.

The training covered

- Theory and technical background
- Practical advice on sample preparation and data analysis
- Validation and quality assurance

Modules

- Welcome and introduction
- Authenticity
- SNIF-NMR
- IRMS – Stable isotopes introduction
- IRMS – ¹³C analysis of ethanol of wine and ¹⁸O analysis of wine water
- IRMS – System Tests and Trouble Shooting
- IRMS – Reference Material and Quality Control
- EU Wine Database
- Chromatographic methods



- Validation and quality assurance

Additional videos:

- SNIF-NMR Calculation video
- SNIF-NMR Instrument video
- EU Wine Databank Microvinification video

List of participants: 6 trainees



REPORT: EU-China-Safe training event

Title:

Rapid, microwave-assisted analysis of eight bound nitrofurans residues in meat

Date: 9 September 2021

Organizer: Teagasc, Dublin, Ireland

Venue: on-line

Agenda of the training event:

1. PowerPoint Presentation to give an overview nitrofurans and an overview of the new method.
2. Video prepared by Teagasc showing the operation of key steps of the method in the laboratory.
3. A standard operating procedure of the method.

Description of the training content:

- MD opened the training by giving a brief background on the WP4 package on food safety, which has multiple tasks including veterinary drugs (nitrofurans and antivirals), chlorates, nitrates, food contact materials and pesticides. Research is being carried out in the China Agricultural University (CAU) in Beijing on screening methods, development of antibodies and prototype assays.
- MD gave a presentation on the work that has been carried out during method development for nitrofurans analysis.
 - Gave a brief overview on the background of nitrofurans drugs and the existing methodologies for monitoring them, highlighting the importance of nitrofurans analysis, given that they are classified as Group A substances.
 - Spoke on the identification of new target residues for monitoring nitrofurans abuse and how the method has been extended to include eight metabolites.
 - Described the selectivity achieved using phenyl-hexyl column chemistry, and the importance of optimising mobile phase composition and the LC gradient profile in order to address matrix interferences and to prolong column lifetimes.
 - Highlighted the need for incurred materials when developing a method for bound residues, given that the microwave reaction required re-optimisation once it was found that the 13 min reaction was insufficient for hydrolysing the bound residues from the protein.
 - Gave a full overview of the final method – extensive washing of samples, microwave reaction for hydrolysis and derivatisation, neutralisation, QuEChERS extraction, LC-MS/MS analysis.

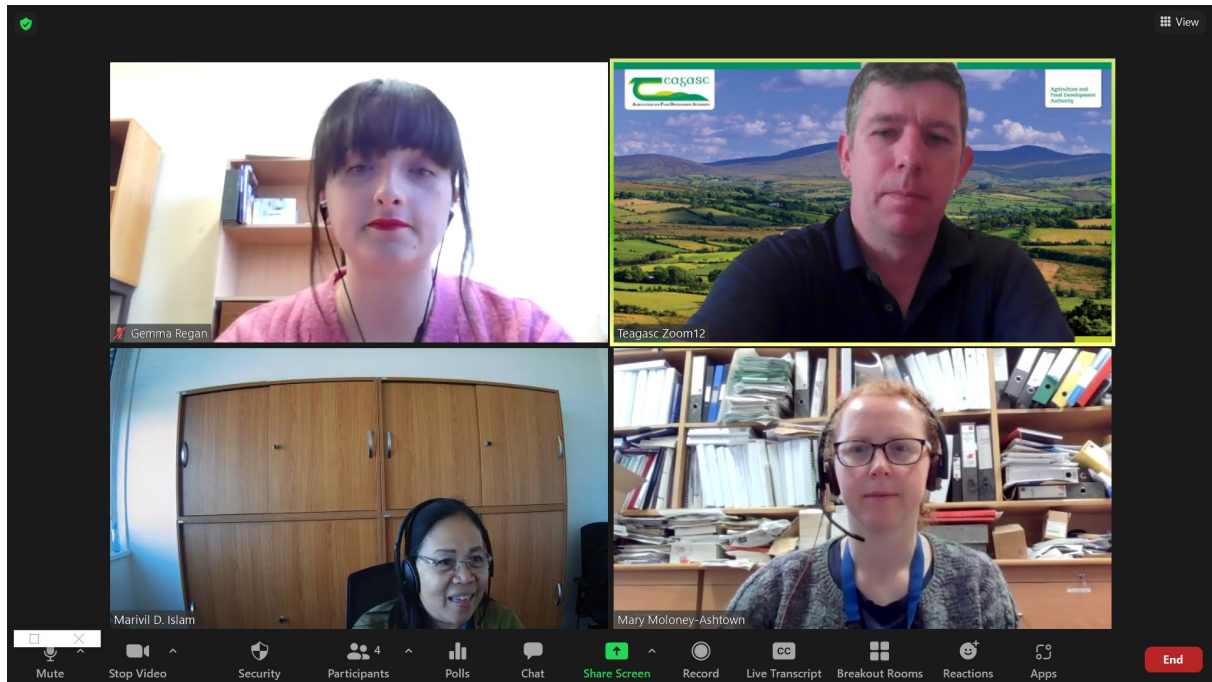


- Outlined the validation procedure in accordance with 2021/808/EC legislation – results table showed the high accuracy and precision of the method.
- Concluded presentation by emphasising the extended scope of analysis and the faster sample turnaround times.
- MD asked MI if she had any questions after the presentation. MI enquired about the capacity of the CEM Mars6 microwave. MM explained that 50 samples can be derivatised in one run, but if two analysts work in tandem, a lab could comfortably do a 100 sample run in one day, given that the reaction time is only 2 hours. MD continued by saying that another extraction could be carried out the following day and those samples could be tagged onto the end of the original run.
- MI asked about the calibration curve for the method. MD answered by explaining that the method uses matrix-matched calibration, but that the samples are spiked with the metabolites after washing (otherwise they would get washed away due to not being bound).
- Next, MD played a video recording of the method, noting that it was filmed prior to the microwave reaction being re-optimised. The microwave reaction is now 2 hours instead of 13 minutes, and the video will be amended in due course. He also explained how the Minimix paint mixer and the ceramic pellets allow for 36 samples to undergo QuEChERS extraction simultaneously. Without these, an analyst is limited to 6 samples due to MgSO₄ clumping.
- MI requested a copy of the video as it was lagging a little on her side. MD said he would either upload to OneDrive if possible, or alternatively he will arrange for a USB to be sent over.
- MD will also send on the Standard Operating Procedure (SOP) for the method.
- To conclude the meeting, MD spoke on the availability of the different chemistries for the method – HBH and AGN are readily available, while OAH is more novel and is limited to Witega only. In total, 16 chemistries are needed – 8 metabolites and 8 internal standards (NP standards are also available for recoveries).
- MD recommended the Agilent ZORBAX Phenyl Hexyl column (2.1 × 50 mm; 1.8 μm), details of which are in the SOP.
- MI hopes to begin work on nitrofurans analysis by the end of 2021 or start of 2022. She will contact her network, including Vietnam and the Philippines. MD stated that any country involved in exporting aquaculture, especially shrimp, to the EU, will have a big interest in nitrofurans detection. MI will also reach out to James (African Food Safety Network) to discuss collaboration.
- MI will reach out to MD and our lab if she has any further question in the implementation of the method.



List of participants: 4 trainees

Photo:



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 727864 and from the Chinese Ministry of Science and Technology (MOST).

REPORT: EU-China-Safe training event

Title:

Training in whole genome sequencing (WGS) and analysis of genomic data

Date: 8 February 2022

Organizer: UCD, Dublin, Ireland

Venue: on-line

Agenda of the training event: see attached

Description of the training content:

This virtual training presented the background to DNA sequencing, followed by a detailed technical presentation describing the key steps involved from purification of the template DNA; through to sequencing steps including the chemistry. In later talks, three presentations describing the application of WGS to describe the epidemiology of Shiga toxin-producing *Escherichia coli* (STEC) and *Listeria monocytogenes* followed by a presentation on next generation sequencing (NGS) involving 16S rRNA amplicon-based sequencing and short-read shot-gun metagenomics.

These approaches were firmly embedded in the context of high-resolution risk assessment applied to the protection of public health.

List of participants: 3 trainees





Training event in Whole Genome Sequencing (WGS) and analysis of genomic data

UCD-Centre for Food Safety (UCD-CFS)

School of Public Health, Physiotherapy & Sports Science:

Date & Time: Tuesday 8th February, 2022 at 11.30 h (Irish time)

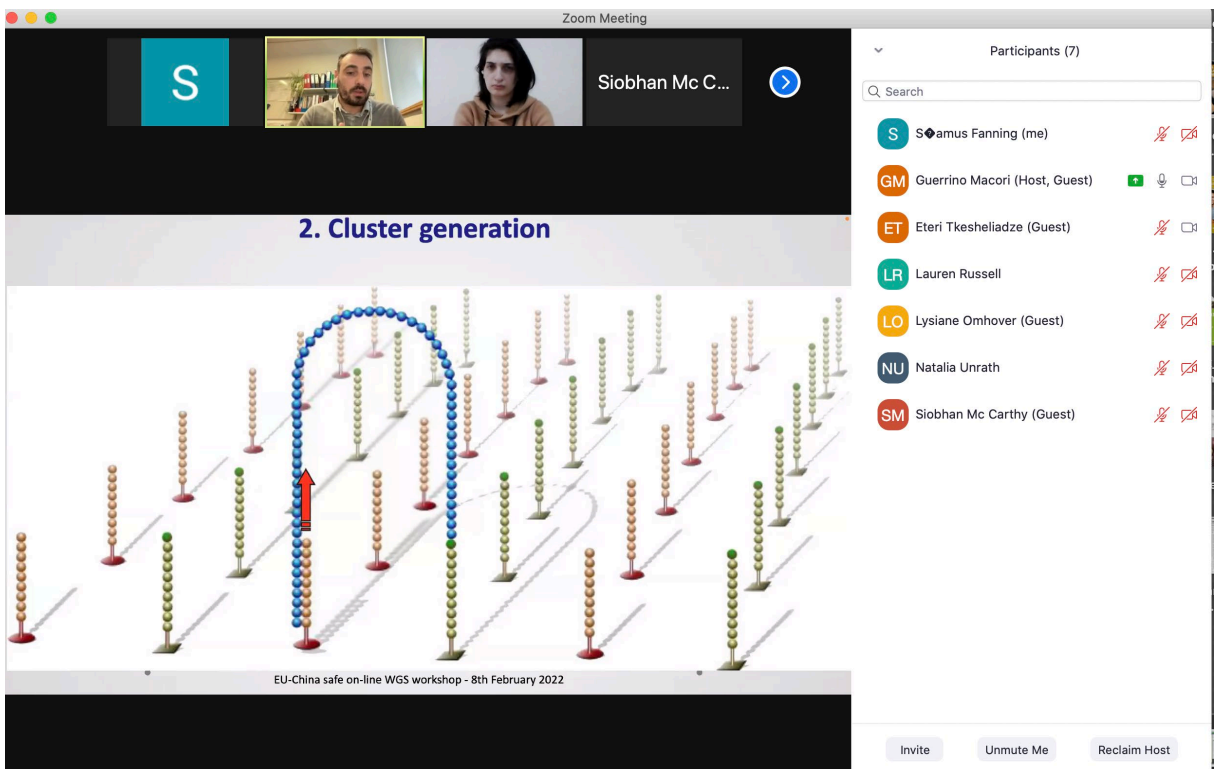
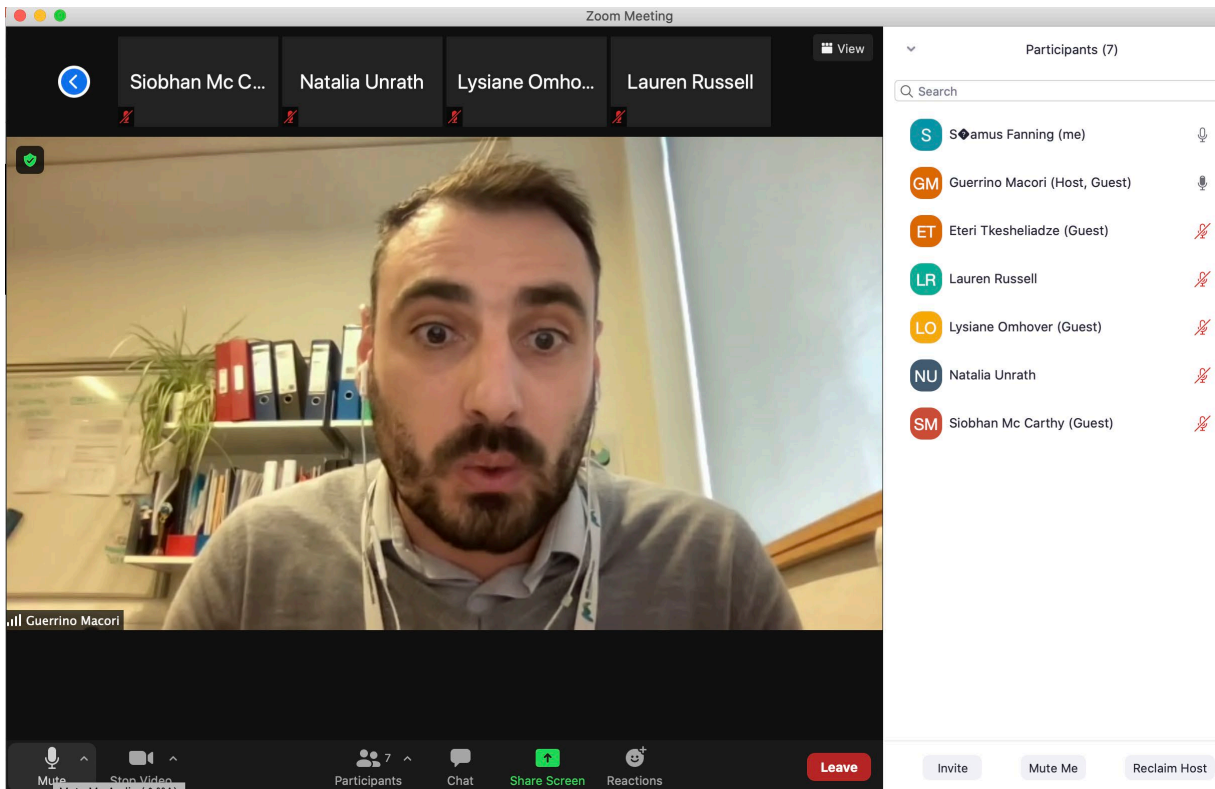
Venue: on-line via Zoom

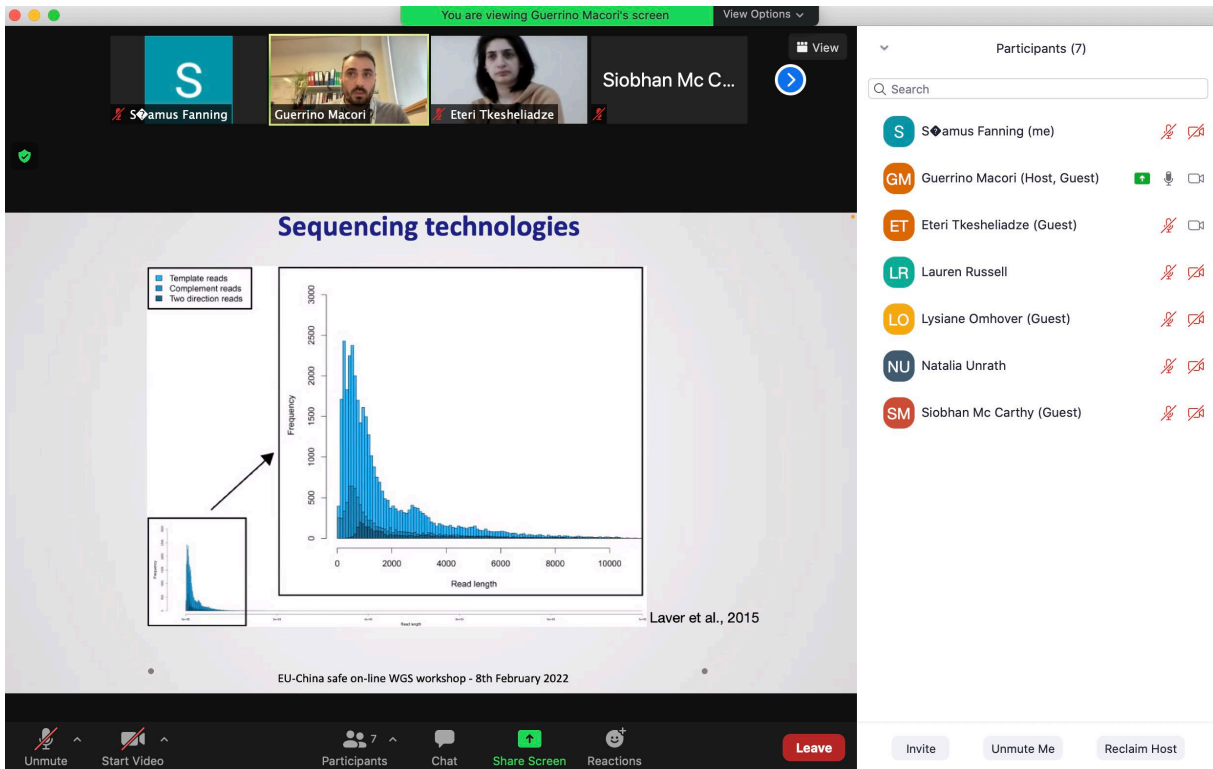
Agenda:

- 11.30 -11.45 h** Welcome and setting out the plan for the workshop (Professor Séamus Fanning)
- 11.45-12.00 h** Introduction to DNA sequencing (Professor Séamus Fanning)
- 12.00-13.00 h** Working with raw read sequencing day; the necessary steps (Dr Guerrino Macori)
- 13.00-14.00 h** Lunch break
- 14.00-14.30 h** Molecular epidemiology of STEC (Ms. Siobhán McCarthy)
- 14.30-15.00 h** Molecular epidemiology of *Listeria monocytogenes* (Ms. Natalia Unrath)
- 15.00-15.30 h** An introduction to metagenomics (Dr Guerrino Macori)
- 15.30-16.00 h** Questions & Answers
- 16.05 h** Close of the workshop



Photos:





Sequencing technologies

Legend:
 ■ Template reads
 ■ Complementary reads
 ■ Two direction reads

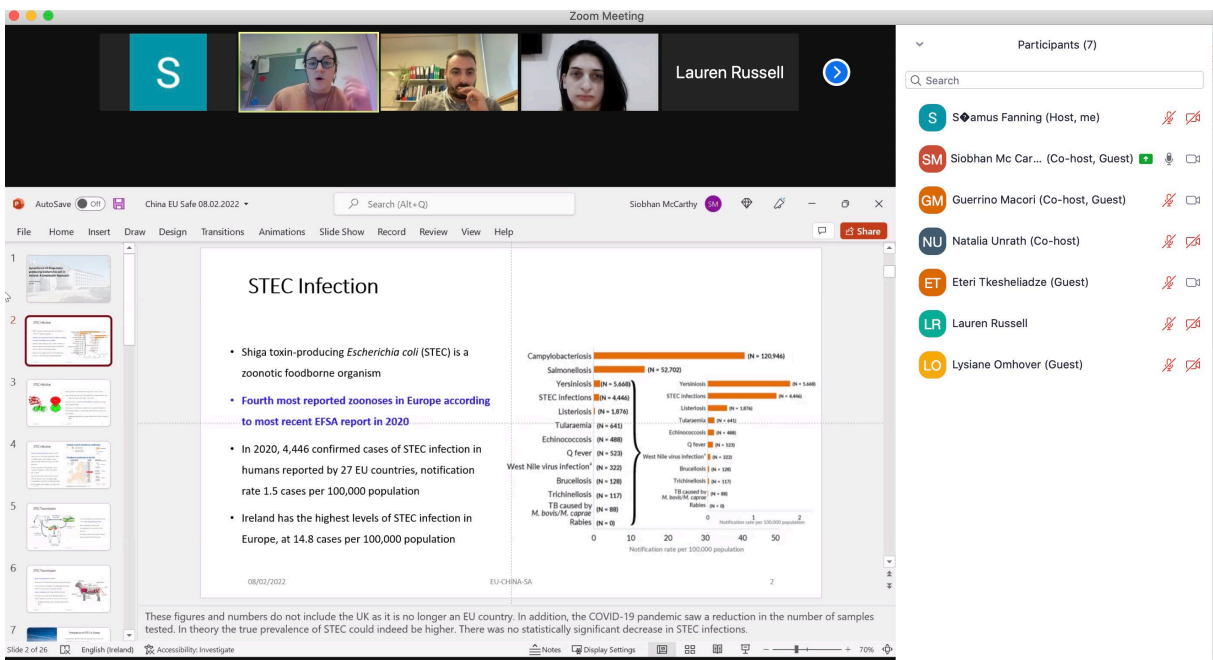
Frequency

Read length

Laver et al., 2015

EU-China safe on-line WGS workshop - 8th February 2022

Participants (7): S Siobhan Mc Carthy (Guest), GM Guerrino Macori (Host, Guest), ET Eteri Tkesheliadze (Guest), LR Lauren Russell, LO Lysiane Omhover (Guest), NU Natalia Unrath, SM Siobhan Mc Carthy (Guest)



STEC Infection

- Shiga toxin-producing *Escherichia coli* (STEC) is a zoonotic foodborne organism
- Fourth most reported zoonoses in Europe according to most recent EFSA report in 2020
- In 2020, 4,446 confirmed cases of STEC infection in humans reported by 27 EU countries, notification rate 1.5 cases per 100,000 population
- Ireland has the highest levels of STEC infection in Europe, at 14.8 cases per 100,000 population

Notification rates per 100,000 population

Disease	Notification rate per 100,000 population
Campylobacteriosis	52.702
Salmonellosis	12.946
Yersiniosis	5.641
STEC Infections	4.446
Listeriosis	1.874
Tularaemia	1.445
Echinococcosis	1.445
Q fever	1.328
West Nile virus infection	1.328
Brucellosis	1.117
Trichinellosis	1.117
TB caused by M. bovis/ M. caprae	0.88
Rabies	0.12

08/02/2022 EU-CHINA-SA

These figures and numbers do not include the UK as it is no longer an EU country. In addition, the COVID-19 pandemic saw a reduction in the number of samples tested. In theory the true prevalence of STEC could indeed be higher. There was no statistically significant decrease in STEC infections.

Participants (7): S Siobhan Mc Carthy (Host, me), SM Siobhan Mc Car... (Co-host, Guest), GM Guerrino Macori (Co-host, Guest), NU Natalia Unrath (Co-host), ET Eteri Tkesheliadze (Guest), LR Lauren Russell, LO Lysiane Omhover (Guest)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 727864 and from the Chinese Ministry of Science and Technology (MOST).

Zoom Meeting

Participants (7)

- S Siobhan Fanning (Host, me)
- GM Guerrino Macori (Co-host, Guest)
- NU Natalia Unrath (Co-host)
- SM Siobhan Mc Carthy (Co-host, Guest)
- ET Eteri Tkesheladze (Guest)
- LR Lauren Russell
- LO Lysiane Omhover (Guest)

2. 16S rRNA gene sequencing

How are 16S sequence data analysed?

Demultiplexing and quality assessment

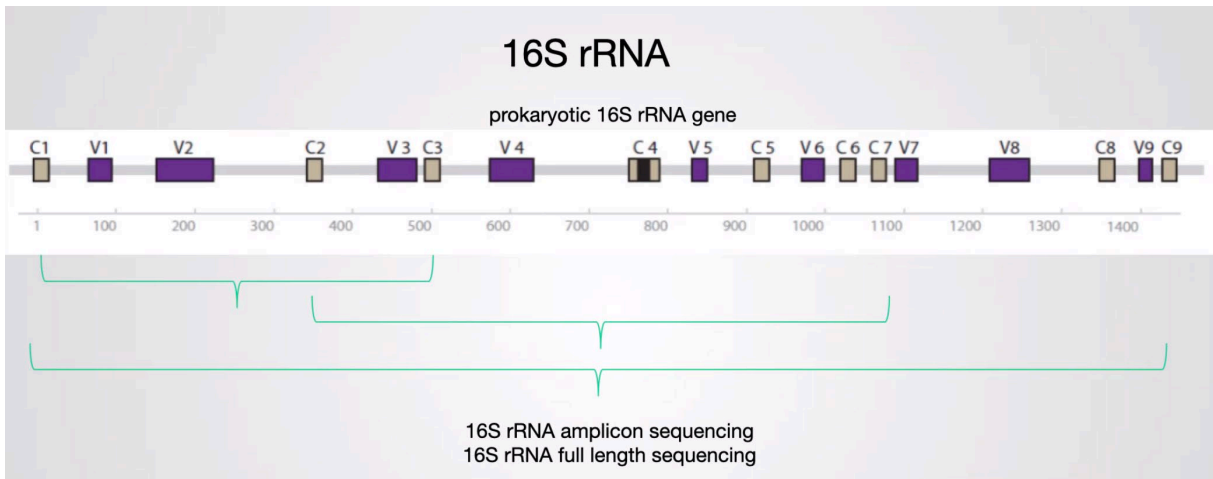
Analysis tools for targeted amplicon data

QIIME, *mothur* and *VAMPS* developed to allow the comparison of microbial communities

- **QIIME** - **Q**uantitative **I**nsights Into **M**icrobial **E**cology <http://qiime.org>
- **Open-source bioinformatics pipeline**
*Raw reads, identify rRNA, cluster to OTUs, taxon classification, diversity analysis, comparative statistics, various plots

Databases:

- Greengenes <http://greengenes.secondgenome.com/>
- SILVA <http://www.arb-silva.de/>



Zoom Meeting

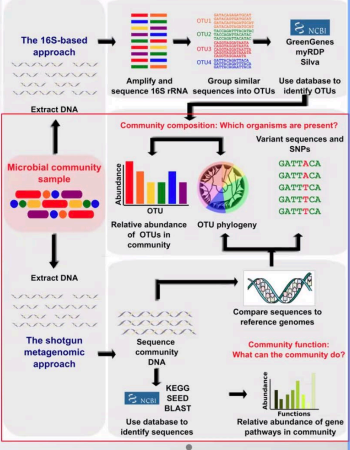
Participants (8)

3. Shotgun metagenomics sequencing

Output analysis

A basic workflow

- Quality control and quality trimming of reads
- Binning [classification]
- Community profiling
- Analyse and compare samples



Microbial community sample

Community composition: Which organisms are present?

Variant sequences and SNPs

Relative abundance of OTUs in community

OTU phylogeny

Shotgun metagenomic approach

Sequence community DNA

Compare sequences to reference genomes

Community function: What can the community do?

KEGG SEED BLAST

Use database to identify sequences

Relative abundance of gene pathways in community

Shotgun metagenomic approach

Morgan & Huttenhower, 2012

Zoom Meeting

Participants (8)

3. Shotgun metagenomics sequencing

	16S rRNA (Amplicon Sequencing)	Shotgun Sequencing
Type of information produced	The taxonomic composition and phylogenetic structure of a microbial community expressed as OTUs ⁸	Functional and process-level characterization of microbial communities as a whole, and the reconstruction of draft genome sequences for individual community members.
Application	Monitor populations	Detect new members, new genes, and resolve complex taxonomies.
Ability to detect rare members of the community (sensitivity)	Highly sensitive. rRNA makes up 80% of total bacterial RNA	Requires much deeper sequencing to achieve the same level of sensitivity
Biases	Bias produced by the probes ⁹ and the PCR itself ¹⁰ . The amplified region may not accurately represent the whole genome due to horizontal transfer or mutations ¹¹ .	Sequence content bias
Gene content	The gene inventory and the encoded functionality of most microbial species are largely unknown and may also vary considerably among strains.	Generate extensive gene inventories and partial genomes. Discover new genes and biological pathways.

⁸Operational taxonomic units (OTUs)

⁹Kindworth et al., 2013 - Evaluation of general 16S ribosomal RNA gene PCR primers for classical and next-generation sequencing-based diversity studies. Nucleic Acids Res 41: e1

¹⁰Soergel et al., 2012 - Selection of primers for optimal taxonomic classification of environmental 16S rRNA gene sequences. ISME J 6: 1440-1444

¹¹Asai et al., 1999 - An Escherichia coli strain with all chromosomal rRNA operons inactivated: complete exchange of rRNA genes between bacteria. Proc Natl Acad Sci U S A 96: 1971-1976



Zoom Meeting

Participants (8)

Q Search

S Siobhan Mc C... Natalia Unrath

4. Microbiome and human health

The relationship between some gut flora and humans is not merely commensal (a non-harmful coexistence), but rather a mutualistic relationship

microorganisms benefit the host by **fermenting dietary fiber into short-chain fatty acids (SCFAs)**, such as acetic acid and butyric acid, which are then absorbed by the host.

Intestinal bacteria also **play a role in synthesizing vitamin B and vitamin K** as well as metabolizing bile acids, sterols, and xenobiotics

Zeber-Lubecka et al., 2016

Participants (8): S Siobhan Fanning (Host, me), GM Guerrino Macori (Co-host, Guest), NU Natalia Unrath (Co-host), SM Siobhan Mc Carthy (Co-host, Guest), ET Eteri Tkesheladze (Guest), LR Lauren Russell, LK Leonard Koolman (Guest), LO Lysiane Omhover (Guest)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 727864 and from the Chinese Ministry of Science and Technology (MOST).

REPORT: EU-China-Safe training event

Title:

Measurement Uncertainty & Reference Materials Training Workshop

Date: 14 December 2021

Organizer: QUB, Belfast, UK

Venue: on-line

Agenda of the training event: see attached

Agenda – Measurement Uncertainty

- What is measurement uncertainty and why do we need it?
 - Definitions
 - Sources of measurement uncertainty
 - Available guidance
- Uncertainty evaluation
 - Key rules
 - Converting and combining uncertainties
 - 'Top-down' approaches
 - Bioanalytical aspects
- Interpretation of uncertainty
 - Assessing compliance
- Sources of further information, training, and guidance

Agenda – Reference Materials

- What are reference materials and why do we need them?
 - The differences between reference materials (RM) and certified reference materials (CRM)
- How should reference materials be made?
 - ISO 17034 :2016 General requirements for the competence of reference material producers
- What information should accompany RM and CRM
- Selection of RM and CRM
- Handling and storage
- Use in method validation and analytical quality control
- Sources of further information, training and guidance

Description of the training content: on-line workshop on Measurement Uncertainty & Reference materials delivered by Prof. Michael Walker (QUB)

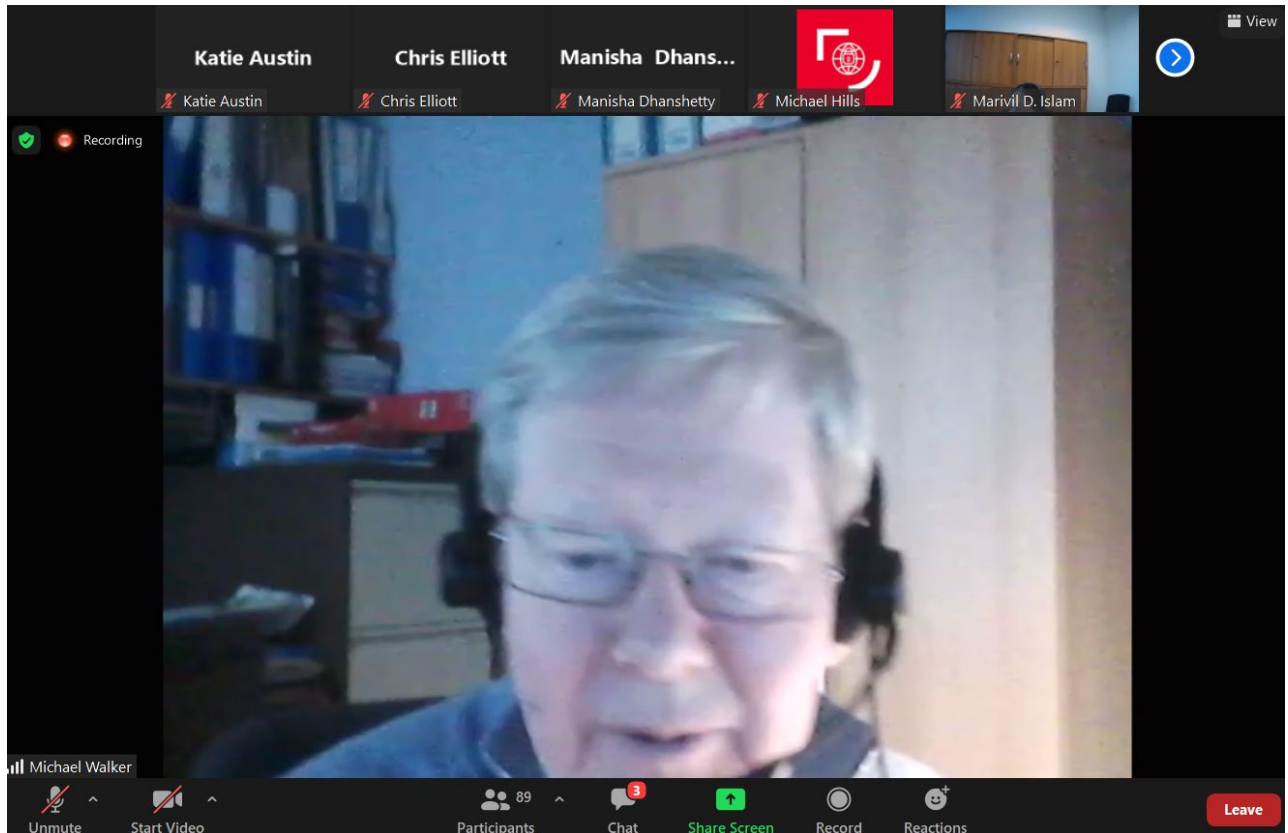
List of participants: on-line workshop with 100+ participants



Workshop recording can be found at:

<https://mediasite.qub.ac.uk/Mediasite/Play/cce5b9575f3d479a9439b89ba17b6b081d>

Photos:



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 727864 and from the Chinese Ministry of Science and Technology (MOST).

Measurement Uncertainty & Reference Materials

EU-China-Safe training event

14 December | 09:30 - 12:00 (GMT) | Hosted via Zoom

The training will be delivered in two on-line one hour sessions delivered via Zoom with a 20-minute break between each session. Each session will give an overview and point to sources of further information, training and guidance.

Each session will be structured as follows;

1. Introduction (5 minutes), Professor Chris Elliott
2. Presentation (40 minutes), Professor Michael Walker
3. Question and answer session (10 minutes), Professor Michael Walker
4. Conclusions

The session contents will cover the following topics;

Session 1: Measurement Uncertainty

What is measurement uncertainty and why do we need it?

- Definitions
- Sources of measurement uncertainty
- Available guidance

Uncertainty evaluation

- Key rules
- Converting and combining uncertainties
- 'Top-down' approaches
- Bioanalytical aspects

Interpretation of uncertainty

- Assessing compliance

Sources of further information, training and guidance

Session 2: Reference Materials

What is measurement uncertainty and why do we need it?

- The differences between reference materials (RM) and certified reference materials (CRM)

How should reference materials be made?

- ISO 17034 :2016 General requirements for the competence of reference material producers

What information should accompany RM and CRM

Selection of RM and CRM

Handling and storage

Use in method validation and analytical quality control

Sources of further information, training and guidance



REGISTER HERE



CONTACT US



HOSTED VIA ZOOM

Institute for Global Food Security

Biological Sciences, 19 Chlorine Gardens, Belfast, BT9 5DL

www.qub.ac.uk/igfs | igfs-events@qub.ac.uk | +44 (0) 28 9097 6514

REPORT: EU-China-Safe training event

Title: Analysis of POPs in food by GC-MS/MS for regulatory compliance

Dates: 24-28 January 2022

Organizer: Fera Science Ltd, York, UK

Venue: On-site at Fera Science Ltd, York Biotech Campus, Sand Hutton, York YO41 1LZ, UK

Agenda of the training event:

Day 1

half day – From 11 am

- Health and safety induction **(SM)**
- Welcome to Fera Science Ltd **(SM)**
- Introduction to the OEC team **(SP/FS)**
- POPs what are they? **(MR)**
 - Dioxins
 - PCBs
 - PAHs
 - BFRs
 - New and emerging POPs (i.e. PFAS)
- Regulations relating to POPs in foods (and animal feed) with emphasis on dioxins and PCBs **(MR)**

Day 2

- Extraction and analysis of dioxins and PCBs **(SP/FS)**
- Brief outline of Fera extraction method **(SP/FS)**
- Use of internal standards **(FS/SP)**
- Hands on training – extraction of dioxins and PCBs using Fera method, day 1 **(MH)**

Day 3

- Hands on training – extraction of dioxins and PCBs using Fera method day 2 **(MH)**
- Analysis of dioxins and PCBs using GC-HRMS **(FS)**

Day 4

- Hands on training – extraction of dioxins and PCBs using Fera method day 3 **(MH)**
- Analysis of dioxins and PCBs using GC-MS/MS **(SP)**
- Brief overview on analysis of PFAS **(SS)**

Day 5

half day - morning

- Evaluation of results **(FS/SP/MR)**



- Calculating uncertainty for POPs analysis (**SP**)
- Useful resources (e.g. where to purchase standards) (**FS/SP**)
- Any other questions (**FS/SP/MH/MR**)

Staff involved in training (initials in **bold**)

MR – Martin Rose

SM - Susan MacDonald

FS – Frankie Smith

SP – Sean Panton

MH - Mel Holland

SS – Sara Stead

Description of the training content:

Training consisted of a series of presentations and some hands on training in methods of extraction of dioxins and PCBs in foods. The presentations have been sent to WP6 WP leader VSCHT in PDF format and are included as Annex 1 to this report.

Day 1

General welcome and introductions were followed by introductory housekeeping and safety briefings. This was followed by general introduction to Fera and its science and research. Brief introduction to the Stockholm Convention on POPs and EU legislation on POPs with respect to foods and animal feed.

Day 2

Basics of extraction methods for dioxins and PCBs in foods, with emphasis on procedures used at Fera. Overview of the use of internal standards (isotope dilution) for quantification of dioxins and PCBs.

Hands on training – Fera extraction method for dioxins and PCBs in food, day 1 (sample preparation, addition of internal standards and initial extraction).

Day 3

Overview of analysis of dioxins and PCBs using GC-HRMS. Instrument set-up and operation. Outline of strategy for fractionation of PCBs, dioxin-like PCBs and dioxins.

Hands on training – Fera extraction method for dioxins and PCBs in food, day 2 (concentration and clean-up of the ortho-PCB fraction).

Day 4

Overview of analysis of dioxins and PCBs by GC-MS/MS. Choice of GC columns and ions monitored. EU performance criteria for analysis of dioxins and PCBs by GC-MS/MS.

Examples of GC-MS/MS chromatograms were given.

Hands on training – Fera extraction method for dioxins and PCBs in food, day 3 (concentration and clean-up of the dioxin fraction).



Day 5

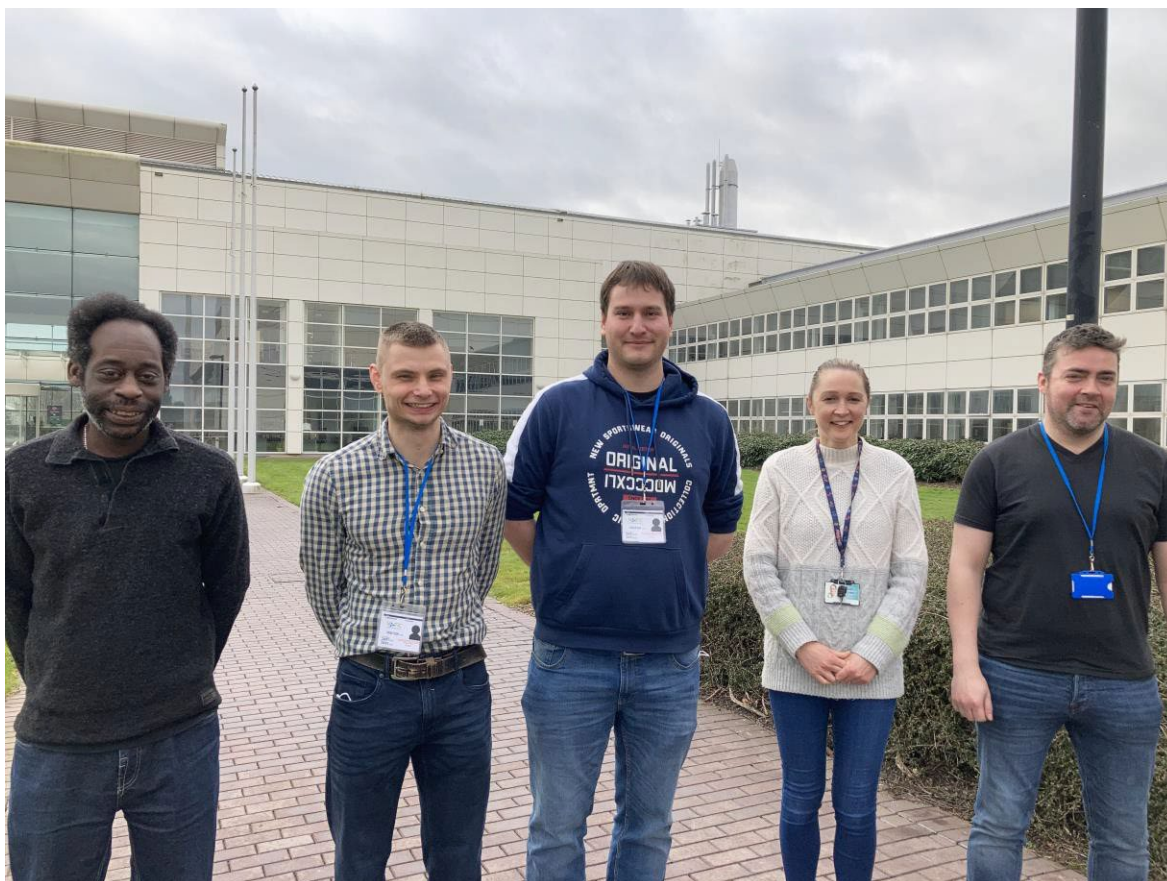
Review of chromatograms from GC-HRMS and GC-MS/MS analysis. Introduction to the calculation of measurement uncertainty using “top down” method.

List of participants: 2 trainees

Unfortunately, due to restrictions in the numbers of personnel in laboratories for COVID security, the number of delegates was restricted.

The delegates were supplied with copies of the presentations and information about the analytical methods that they were trained in. Certificates of attendance were provided for the delegate. Both delegates completed feedback questionnaires. The delegates found the course content useful and marked all aspects of the training and the course material as ‘1’, exceeded expectations. Copies of the attendance certificates and feedback forms can be found in Annexes 2 and 3 respectively.

Course photographs



From left to right: Sean Panton (Fera Science Ltd), trainee no 1 (VSCHT), trainee no 2 (VSCHT), Mel Holland (Fera Science Ltd), Frankie Smith (Fera Science Ltd)





From left to right: trainees (VSCHT), Mel Holland (Fera Science Ltd)



Certificates of Attendance



Certificate of Attendance

This is to certify that

Ondrej Parizek
attended

Training course – Analysis of POPs in food by GC-MS/MS for regulatory compliance

**at Fera Science Ltd
on 24th to 28th January 2022**

Signed  
Sean Panton & Susan MacDonald



Fera Science Ltd, Sand Hutton, York, YO41 1LZ.





Certificate of Attendance


This is to certify that

Jakub Tomasko

attended

Training course – Analysis of POPs in food by GC-MS/MS for regulatory compliance

at Fera Science Ltd
on 24th to 28th January 2022

Signed 
Sean Panton & Susan MacDonald



Fera Science Ltd, Sand Hutton, York, YO41 1LZ.



Course Feedback Questionnaires

Analysis of POPs in food by GC-MS/MS for regulatory compliance

Training Workshop:

Monday 24th – 28th January 2022
Fera Science Ltd, Sand Hutton, York.

FEEDBACK QUESTIONNAIRE

Please take a small amount of time to complete this feedback form. It will help us to assess how well the workshop met your expectations and allow us to make improvements for future events.

Please mark the box (✓) to indicate how well each aspect met your expectations and needs using the scale below:

- | | | |
|---|---------------------------|---|
| 1 | Exceeded expectations | ☺ |
| 2 | Fully met expectations | |
| 3 | No view | ☹ |
| 4 | Partly met expectations | |
| 5 | Did not meet expectations | ☹ |

Training	1	2	3	4	5
Day 1 – presentations on Fera POPs Regulations Relating to POPs	✓				
Day 2 – Presentations on: Extraction and analysis use of internal standards Hands on training – extraction of dioxins and PCBs Fera method	✓				
Day 3 – Hands on training - extraction of dioxins and PCBs Fera method Analysis of dioxins and PCBs using GC-HRMS	✓				



Day 4 Hands on training – method day 3 Presentations – analysis dioxins and PCBs by GC-MS/MS Overview other methods, including PFAS	✓				
Day 5 Evaluation of results Useful resources Wash Up and Q & A Session	✓				

Facilities & Organisation	1	2	3	4	5
General organisation	✓				
Information provided before the Workshop	✓				
Venue meeting room	✓				
Audio visual aids / Presentation notes	✓				
Catering and refreshments			✓		

Please add any other comments or suggestions that you would like to make:

.....

Please provide any general feedback:

The workshop was very beneficial, expanding our knowledge of POPs and their analysis.



Analysis of POPs in food by GC-MS/MS for regulatory compliance

Training Workshop:

Monday 24th – 28th January 2022

Fera Science Ltd, Sand Hutton, York.

FEEDBACK QUESTIONNAIRE

Please take a small amount of time to complete this feedback form. It will help us to assess how well the workshop met your expectations and allow us to make improvements for future events.

Please mark the box (✓) to indicate how well each aspect met your expectations and needs using the scale below:

- 1 Exceeded expectations ☺
- 2 Fully met expectations
- 3 No view ☹
- 4 Partly met expectations
- 5 Did not meet expectations ☹

Training	1	2	3	4	5
Day 1 – presentations on Fera POPs Regulations Relating to POPs	✓				
Day 2 – Presentations on: Extraction and analysis use of internal standards Hands on training – extraction of dioxins and PCBs Fera method	✓				
Day 3 – Hands on training - extraction of dioxins and PCBs Fera method Analysis of dioxins and PCBs using GC-HRMS	✓				



Day 4 Hands on training – method day 3 Presentations – analysis dioxins and PCBs by GC-MS/MS Overview other methods, including PFAS	✓				
Day 5 Evaluation of results Useful resources Wash Up and Q & A Session	✓				

Facilities & Organisation	1	2	3	4	5
General organisation	✓				
Information provided before the Workshop	✓				
Venue meeting room	✓				
Audio visual aids / Presentation notes	✓				
Catering and refreshments			✓		

Please add any other comments or suggestions that you would like to make:

.....

Please provide any general feedback:

.....



REPORT: EU-China-Safe training event

Title:

Comprehension of food fraud vulnerability

Date: 16 February 2022

Organizer: Wageningen University, Wageningen, The Netherlands

Venue: On-line



The poster features the title "EU-China-Safe Virtual Training Course: Comprehension of Food Fraud Vulnerability" at the top. Below the title are four images: the SSAFE logo (a globe with the text "SSAFE"), a photograph of a road leading to a sign that says "Authenti City", a wine bottle with a label that says "SOUR GRAPES", and the EUCINASAFE logo (a stylized apple with EU and Chinese flags) with the text "EUCINASAFE 中欧食品安全". At the bottom left is the Wageningen University & Research logo, and at the bottom right is the date "16 February 2022".

Agenda of the training event: see attached

Morning schedule

Time	Details
09:15-09:30	Technical checks All participants can join general MS Teams channel meeting (click here) and check their connectivity
09:30-10:30	Introduction to food fraud vulnerabilities by Prof. Saskia van Ruth
10:30-11:00	Coffee break All participants can switch off cameras and microphone (mute PC), take a break and re-join the general meeting at 11:00

Time	Details
11:00-11:45	Food fraud vulnerability in real-life: An example of food fraud vulnerabilities in the Chinese milk supply chain network by Dr. Yuzheng Yang, MARS, China
11:45-12:00	Live online quiz about the knowledge gained/Q&A by Dr. Sara Erasmus / Prof. Saskia van Ruth
12:00-13:30	Lunch break All participants can switch off cameras and microphone (mute PC), take a break and re-join the general meeting at 13:30

Afternoon schedule

Time	Details
13:30-13:40	All participants meet in general MS Teams channel meeting (click here) for brief introduction by Dr. Sara Erasmus
13:40-13:45	All participants go to private MS Teams channel groups
13:45-14:45	Fill in 2 nd sheet of the Fraud factors and vulnerability estimation (Sour Grapes case) Excel workbook (located under 'Files' in MS Teams channel) <i>Trainers will join your meeting twice for about 5 min to answer questions from 13:45-14:05 and from 14:10-14:30</i>
From around 14:45	Groups should start to prepare their rapid presentations (infographic or short video or traditional short presentation, etc.)
14:45-15:30	Prepare rapid presentations of maximum 3 min long <i>Trainers will join your meeting once for about 5 min to answer questions from 14:45-15:15</i>
15:30-16:30	Groups present rapid presentations (3 min each, 2 min grading of the reports and questions by all participants)
16:30-17:00	All participants return to general MS Teams channel meeting (click here) for the Final Q&A and evaluation of the day Winner of the E-book on food fraud announced during this final session!

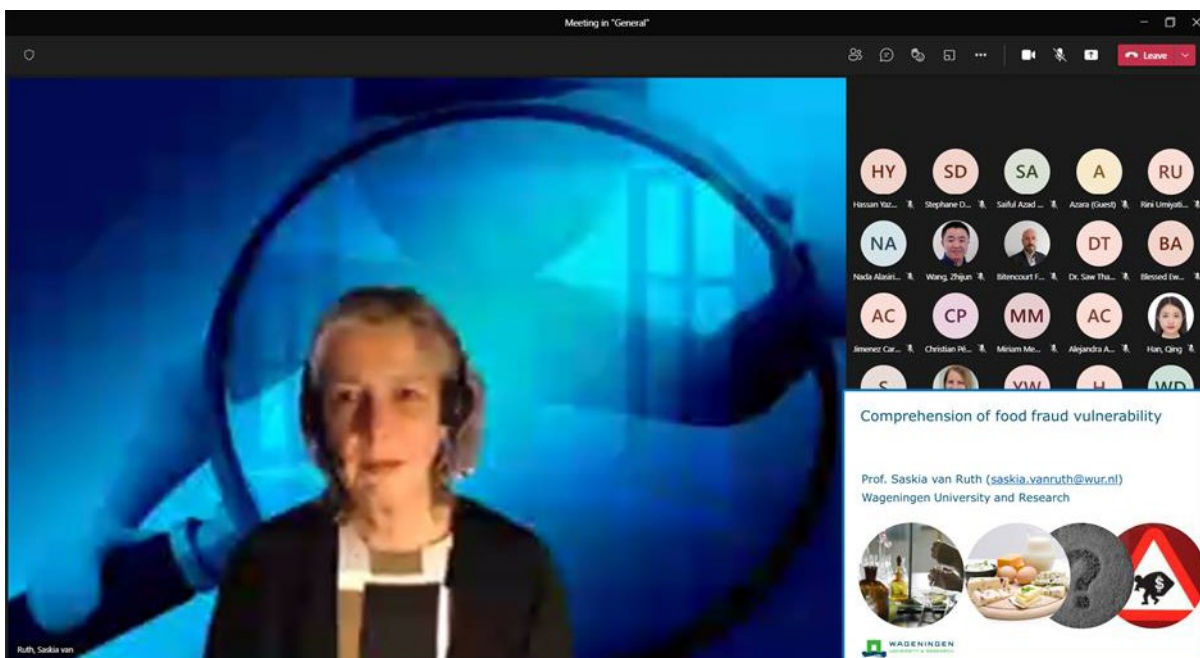
Description of the training content:

The virtual training day/course provided insights into food fraud vulnerability, risk factors and mitigation measures through an introductory lecture of Prof. Saskia van Ruth. The assessment of these risk factors was illustrated by a study into the Chinese milk supply chain network presented by Dr Yuzheng Yang. The knowledge gained was examined using an online quiz. Participants practiced assessing food fraud risk factors with a real-life case on exclusive wines in the afternoon. Prior to the course participants were expected to read two scientific publications and to watch the documentary/movie 'Sour grapes' online. The movie fully described the fraud case, and this was needed to conduct/practice the assessment. Microsoft Teams was used as platform and registrants received a link for access to the platform, the papers, and the movie.

List of participants: 106 registered, 70 participated

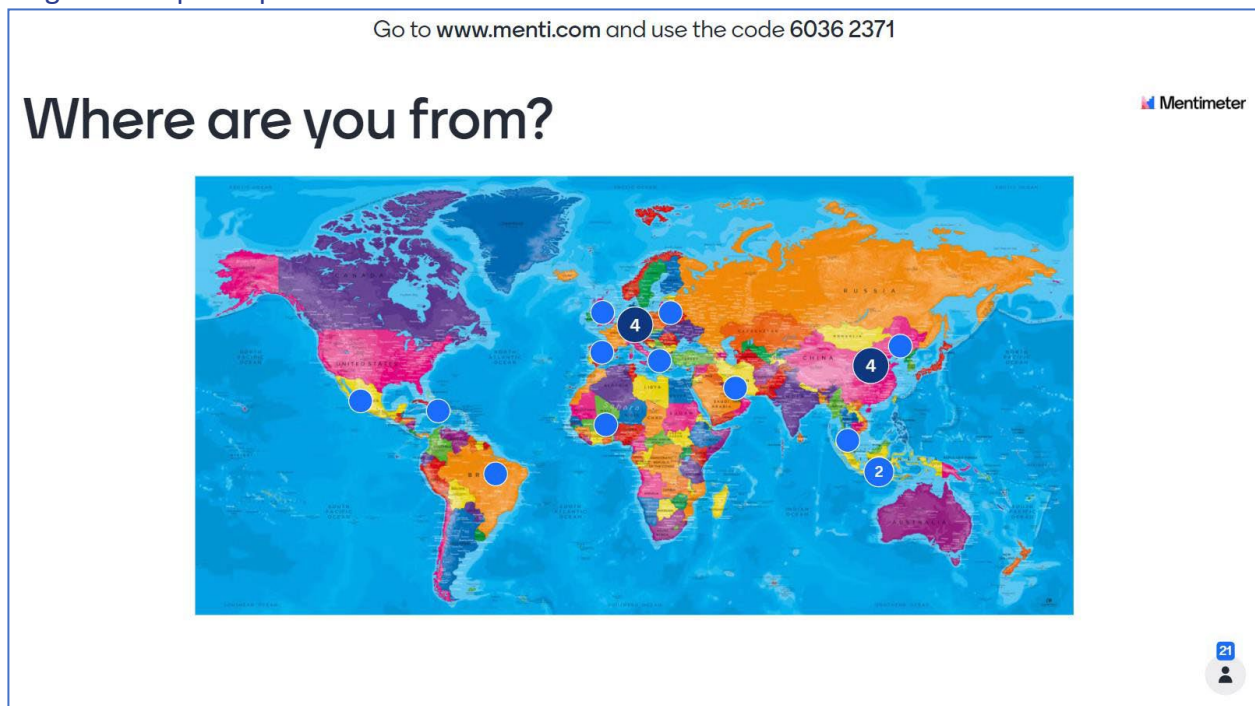
Photos / screen shots of the course:

1. Introduction and lecture by Prof. Saskia van Ruth

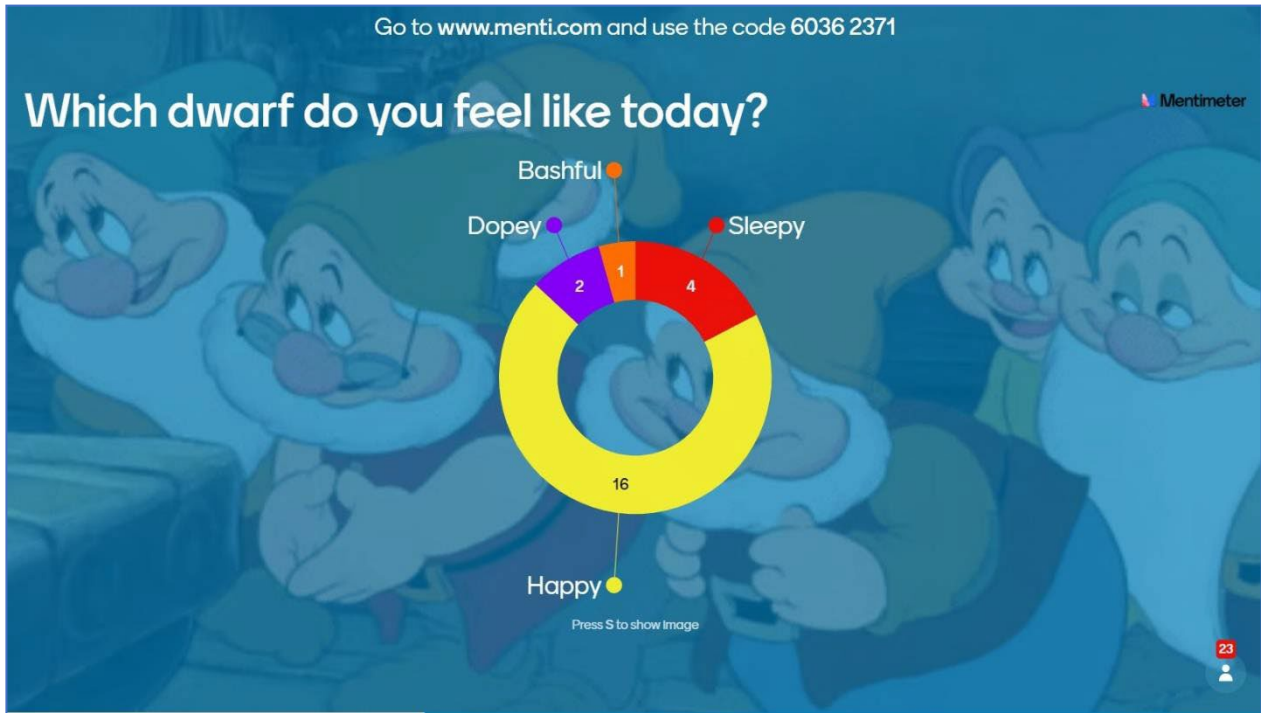


2. Results of the Mentimeter quiz at the start of the training course:

Origin of the participants.



How participants were feeling.




Country from which the participants joined the course.



Profession/professional stage of the participants.


Go to www.menti.com and use the code 6036 2371

What is your profession / academic title?



microbiology researcher
programme manager
degree student
doctor of food science
food scientist
phd student
professor
food chemist
lecturer
project manager
master student
phd candidate
postdoctoral researcher
scientific officer
full professor

Press S to show image




What participants expected to learn from course.

Go to www.menti.com and use the code 6036 2371

What would you like to learn from this food fraud course?

Food fraud prevention	How to detect food fraud	How food fraud is identified
In-depth understanding of fraud vulnerabilities and factors contributing to the vulnerabilities	Something new i don't know already	update methodology in food fraud
How to implement the prevention of food fraud	Become aware of vulnerabilities, prevent food fraud	Methodology on food vulnerability assessments

Press S to show image



Go to www.menti.com and use the code 6036 2371

What would you like to learn from this food fraud course?

classification of the food fraud issues	Upgrade my knowledge and skill in food fraud	Better understanding of food fraud
Understand vulnerability of food fraud	Learn methodology	Food fraud detection and prevention
advanced food fraud detection techniques	Empowering stakeholders to overcome food fraud	To have a deeper knowledge in food fraud and how to identify it

Press S to show image



24

Go to www.menti.com and use the code 6036 2371

What would you like to learn from this food fraud course?

detection techniques	1. to get familiar the activities of EU and China in combat against food fraud 2. To learn how we can arrange a program for IR Iran to combat against	and how to identify it efficiently
a comprehension of Food Fraud Vulnerability	Factors that affect food fraud	Vulnerability Assessments
Factors that affect food fraud		Yes

Press S to show image




24

Participants' previous encounter with food fraud.

Go to www.menti.com and use the code 6036 2371

Have you ever come across food fraud yourself?

Mentimeter



11 Yes

6 No

8 Not sure

Press S to show image

25

3. Presentation of Dr Yuzheng Yang, Mars, China

Background of the project

- Global food fraud incidents
- Melamine incident in China




4. Afternoon hands-on workshop



Participants were divided into groups to perform the assignment. Each trainer (Sara, Qing and Zhijun) had four groups to supervise and provided them with instructions throughout the afternoon. The afternoon was concluded with a feedback session of the case.

Instructions - Theoretical evaluation of fraud vulnerability for the case study:

Sour Grapes – the largest wine scam ever



EU-China-Safe Virtual Training Course: Comprehension of Food Fraud Vulnerability
16 February 2022

Aim of case study


- To analyse which fraud factors, categories & elements played a role in this case

Activities:

- Watch the Sour Grapes movie (5.5 hrs) (before course day)
- Evaluate the fraud factors (2 hrs) (on course day)
- Rapid infographic/video presentation of the results (3 min) (on course day)
- Creative rapid presentation about results of fraud risk assessment

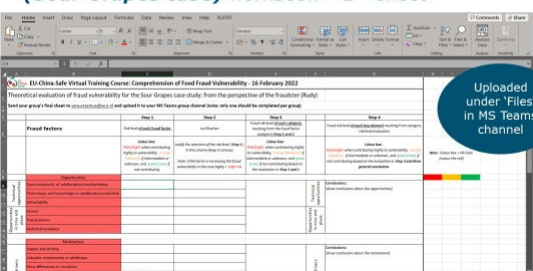
Risk assessment of fraud factors: assess risk levels of factors & provide general estimation of overall fraud risk

Document: *Sour Grapes instructions*




Documents to complete

- Excel *Fraud factors and vulnerability estimation (Sour Grapes case)* workbook – 2nd sheet



Uploaded under 'Files' in MS Teams channel




Fraud factors

Category	Factors
Operational/technical requirements	<ul style="list-style-type: none"> Ease/complexity of adulteration/counterfeiting Technology and knowledge to adulterate/counterfeit Detectability
Opportunities	<ul style="list-style-type: none"> Access Transparency Historical evidence
Economic drivers	<ul style="list-style-type: none"> Supply and pricing Valuable components or attributes Price differences in countries Economic health company Economic health sector
Motivations	<ul style="list-style-type: none"> Competition Financial strains Business strategy Ethical business culture Criminal offences Corruption level Victimization
Regulated controls	<ul style="list-style-type: none"> Fraud monitoring system Information (mass balance) system Tracking and tracing system Fraud contingency plan Code of conduct Employee integrity screening Whistle-blowing system Contractual requirements Social control chain
Managerial controls	<ul style="list-style-type: none"> Guidance for fraud prevention chain Food policy Enforcement

Step 1
Risk level of each fraud factor
Colour box: Red (High) when contributing highly to vulnerability, orange (Medium) if intermediate or unknown, and green (Low) if not contributing

Step 2
Justification
Justify the selection of the risk level (Step 1) in this column (keep it concise)
Note: if the factor is increasing the fraud vulnerability in this case highly = High risk
Not vital to complete justification in detail



Fraud categories


Categories
Operational/technical requirements
Economic drivers
Motivations
Regulated controls
Managerial controls

Step 3
Fraud risk level of each category resulting from the fraud factor analysis in Step 1 and 2
Colour box: Red (High) when contributing highly to vulnerability, orange (Medium) if intermediate or unknown, and green (Low) if not contributing based on the evaluation in Step 1 and 2

Fraud elements

Elements
Opportunities
Motivations
Control elements


Step 4
Fraud risk level of each element resulting from category risk level evaluation
Colour box: Red (High) when contributing highly to vulnerability, orange (Medium) if intermediate or unknown, and green (Low) if not contributing based on the evaluation in Step 3 and draw general conclusions



If we had carried out this assessment before, would we have flagged this situation as risky in terms of food fraud?

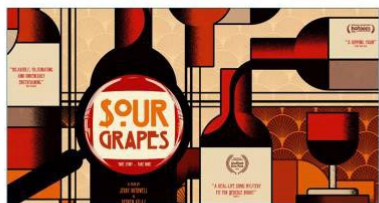
Which of these food fraud categories are relevant and contributed to this case?

Could you also draw general conclusions regarding opportunities, motivations & control measures (high/medium/low risk-contribution)?



Feedback - Theoretical evaluation of fraud vulnerability for the case study:

Sour Grapes – the largest wine scam ever



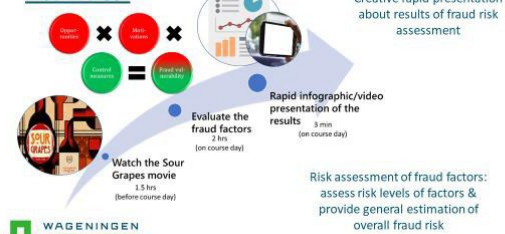
EU-China-Safe Virtual Training Course:
Comprehension of Food Fraud Vulnerability
16 February 2022



Aim of case study

- To analyse which fraud factors, categories & elements played a role in this case

Activities:



2

Fraud factors

Opportunities	Technical/Operational	Opportunities
Technical/Operational	Case's complexity of adulteration/counterfeiting	Technical/Operational
Technical/Operational	Technology and knowledge to adulterate/counterfeit	Technical/Operational
Technical/Operational	Detectability	Technical/Operational
Technical/Operational	Access	Technical/Operational
Technical/Operational	Transparency	Technical/Operational
Technical/Operational	Historical evidence	Technical/Operational
Economic drivers	Motivations	Motivations
Economic drivers	Supply and pricing	Economic drivers
Economic drivers	Valuable components or attributes	Economic drivers
Economic drivers	Price differences in countries	Economic drivers
Economic drivers	Economic health company	Economic drivers
Economic drivers	Economic health sector	Economic drivers
Economic drivers	Competition	Economic drivers
Economic drivers	Financial strains	Economic drivers
Economic drivers	Business strategy	Economic drivers
Economic drivers	Ethical business culture	Economic drivers
Economic drivers	Criminal offences	Economic drivers
Economic drivers	Corruption level	Economic drivers
Economic drivers	Victimization	Economic drivers
Cultural of behaviour	Motivations	Motivations
Cultural of behaviour	Fraud monitoring system	Cultural of behaviour
Cultural of behaviour	Information (open balance) system	Cultural of behaviour
Cultural of behaviour	Tracking and tracing system	Cultural of behaviour
Cultural of behaviour	Fraud contingency plan	Cultural of behaviour
Cultural of behaviour	Code of conduct	Cultural of behaviour
Cultural of behaviour	Employee integrity screening	Cultural of behaviour
Cultural of behaviour	Whistle-blowing system	Cultural of behaviour
Cultural of behaviour	Contractual requirements	Cultural of behaviour
Cultural of behaviour	Social control chain	Cultural of behaviour
Cultural of behaviour	Balance for fraud prevention chain	Cultural of behaviour
Cultural of behaviour	Food policy	Cultural of behaviour
Cultural of behaviour	Enforcement	Cultural of behaviour



3

Fraud factors – opportunities

Opportunities	Technical/Operational	Opportunities
Technical/Operational	Case's complexity of adulteration/counterfeiting	Technical/Operational
Technical/Operational	Technology and knowledge to adulterate/counterfeit	Technical/Operational
Technical/Operational	Detectability	Technical/Operational
Technical/Operational	Access	Technical/Operational
Technical/Operational	Transparency	Technical/Operational
Technical/Operational	Historical evidence	Technical/Operational

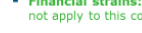
- Ease/complexity of adulteration/counterfeiting:** It was easy to replace the wines because no one would have a reference of the content of the bottles (it was actually a very simple process)
- Technology & knowledge to adulterate/counterfeit:** needed some knowledge on the identity of the wines (but Rudy was not very good at it because he created wines that were never produced in a certain year), **but** it was not a very complex technological process
- Detectability (was not lower/medium):** there are very few methods to really establish the authenticity of vintage wines & it certainly requires an advanced laboratory
- Access:** although it was not during the production, access to the bottles was not a problem for Rudy
- Transparency:** there was no information about the route the wine followed from the producing Chateau. Very misty supply chain.
- Historical evidence:** many incidents with counterfeit wines have been reported before

4

Fraud factors – motivations

Economic drivers	Motivations	Motivations
Economic drivers	Supply and pricing	Economic drivers
Economic drivers	Valuable components or attributes	Economic drivers
Economic drivers	Price differences in countries	Economic drivers
Economic drivers	Economic health company	Economic drivers
Economic drivers	Economic health sector	Economic drivers
Economic drivers	Competition	Economic drivers
Economic drivers	Financial strains	Economic drivers
Economic drivers	Business strategy	Economic drivers
Economic drivers	Ethical business culture	Economic drivers
Economic drivers	Criminal offences	Economic drivers
Economic drivers	Corruption level	Economic drivers
Economic drivers	Victimization	Economic drivers

- Supply & pricing:** limited supply of vintage wines exists & prices are extraordinarily high
- Valuable components or attributes:** value is added to these wines by their geographical origin (a certain Chateau) & year of production
- Price differences in countries:** there may be some price differences in the USA due to import regulations (not known or presented in the video) (Unknown = medium risk)
- Economic health company:** Rudy as the company, he had financial problems
- Economic health sector:** vintage wine sector & buyers have no economic problems
- Competition:** from Rudy's perspective there was reasonable competition with other buyers due to the scarcity of the products
- Financial strains:** financial strains imposed by companies on their direct supplier(s) do not apply to this counterfeit case



5

Fraud factors – motivations

Economic drivers	Motivations	Motivations
Economic drivers	Supply and pricing	Economic drivers
Economic drivers	Valuable components or attributes	Economic drivers
Economic drivers	Price differences in countries	Economic drivers
Economic drivers	Economic health company	Economic drivers
Economic drivers	Economic health sector	Economic drivers
Economic drivers	Competition	Economic drivers
Economic drivers	Financial strains	Economic drivers
Economic drivers	Business strategy	Economic drivers
Economic drivers	Ethical business culture	Economic drivers
Economic drivers	Criminal offences	Economic drivers
Economic drivers	Corruption level	Economic drivers
Economic drivers	Victimization	Economic drivers

- Business strategy:** Rudy was aiming for high short-term profits & did not care about legitimate means
- Ethical business culture:** Rudy had a poorly controlled moral compass & so had his family if we consider those the wider circle around Rudy's business
- Criminal offences:** Rudy was illegally in the USA & his family members had been involved in illegal activities too
- Corruption level:** both the USA & Indonesia present a medium corruption level (transparency.org, score between 25-75)
- Victimization:** no reference to former victimization of Rudy or other people involved

6

Fraud factors – controls

Control measures	Technical controls	
	Opportunities	Technical opportunities in time & place
Fraud monitoring system		
Information (mass balance) system		
Tracking and tracing system		
Fraud contingency plan		
Code of conduct		
Employee integrity screening		
Whistle-blowing system		
Contractual requirements		
Social control chain		
Guidance for fraud prevention chain		
Food policy		
Enforcement		

- **Fraud monitoring system:** no system available
- **Information (mass balance) system:** no system available
- **Tracking & tracing system:** no system available
- **Fraud contingency plan:** no contingency plan available

7

Fraud factors – controls

Control measures	Technical controls	
	Opportunities	Technical opportunities in time & place
Fraud monitoring system		
Information (mass balance) system		
Tracking and tracing system		
Fraud contingency plan		
Code of conduct		
Employee integrity screening		
Whistle-blowing system		
Social control chain		
Guidance for fraud prevention chain		
Food policy		
Enforcement		

- **Code of conduct:** no code of conduct present
- **Employee integrity screening:** no employee integrity screening present
- **Whistle-blowing system:** no whistle-blowing system present (in fraudster company)
- **Social control chain:** very little self-regulation in the chain generally
- **Guidance for fraud prevention chain:** no guidance on fraud prevention in wine chains
- **Food policy:** USA's food policy must have addressed fraud to some extent as Rudy ended up in prison. Known that fraud doesn't have high priority or includes recommendations that enable systematic & consistent controls for food fraud mitigation
- **Enforcement:** No specific enforcement practices specifically aiming at food fraud & systematically being supported by fines/sanctions to enhance fraud detection & prevention. **Enforcement was, however, efficient to catch Rudy**

8

Fraud categories

Control measures	Technical controls	
	Opportunities	Technical opportunities in time & place
Managerial controls		
Control measures		

Fraud elements

Control measures	Technical controls	
	Opportunities	Technical opportunities in time & place
Managerial controls		
Control measures		

9

If we had carried out this assessment before, would we have flagged this situation as risky in terms of food fraud?

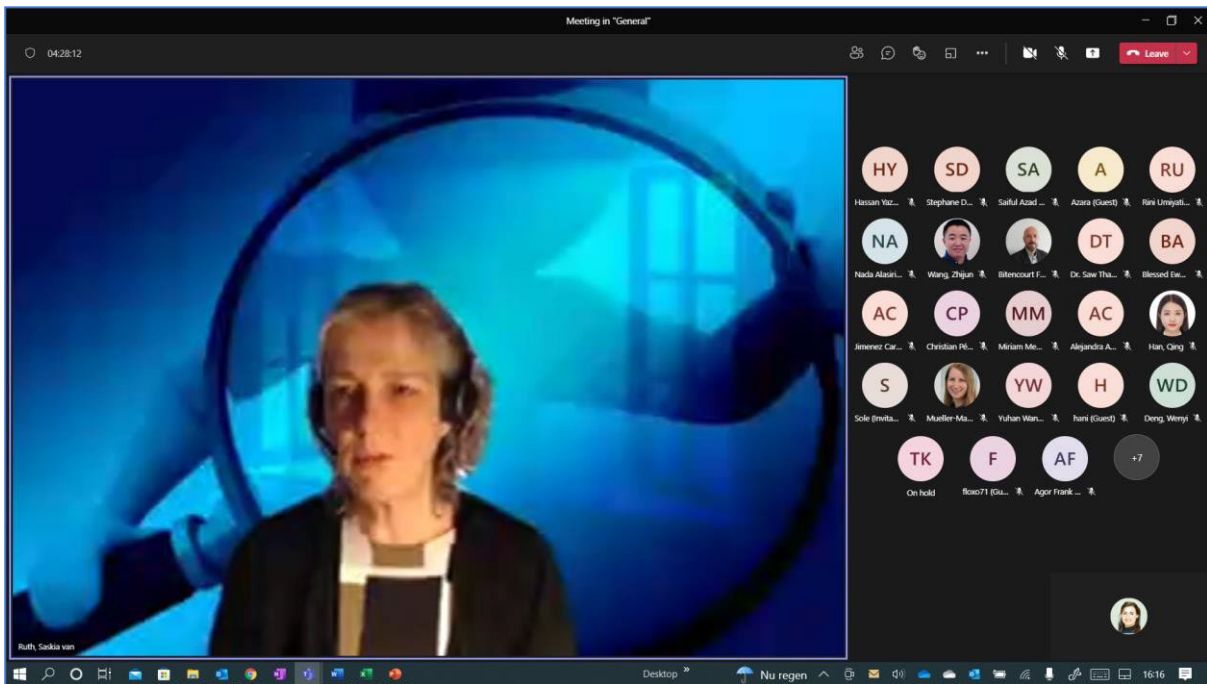
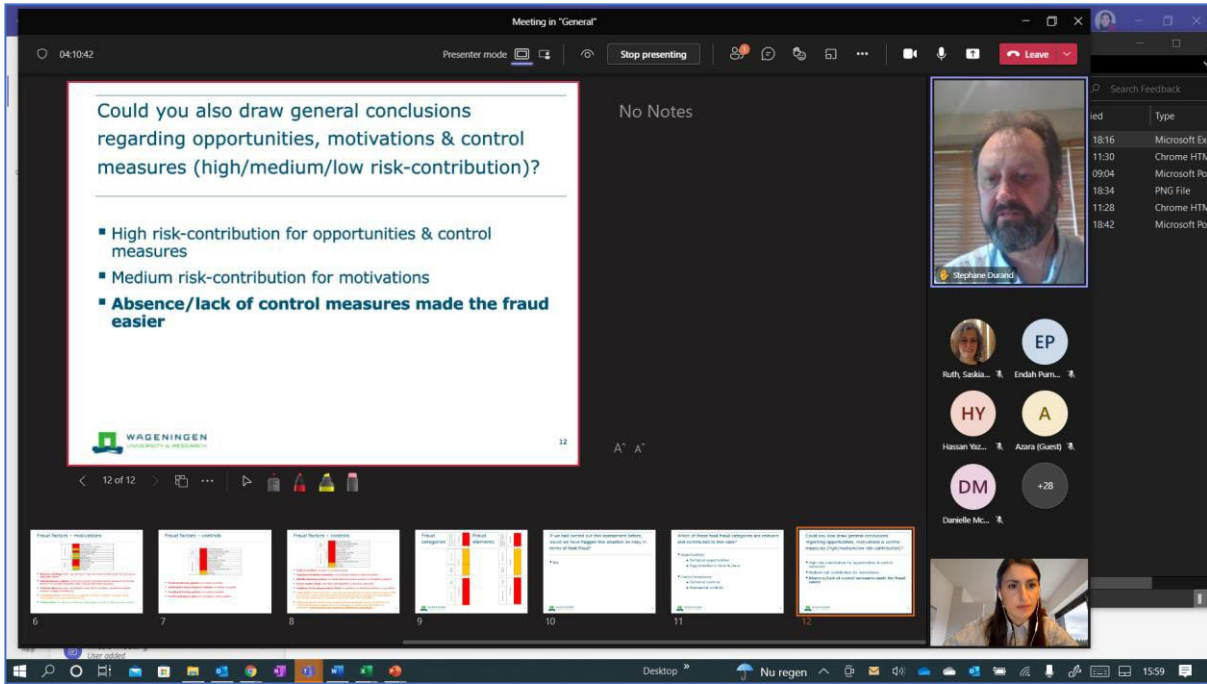
- Yes

10

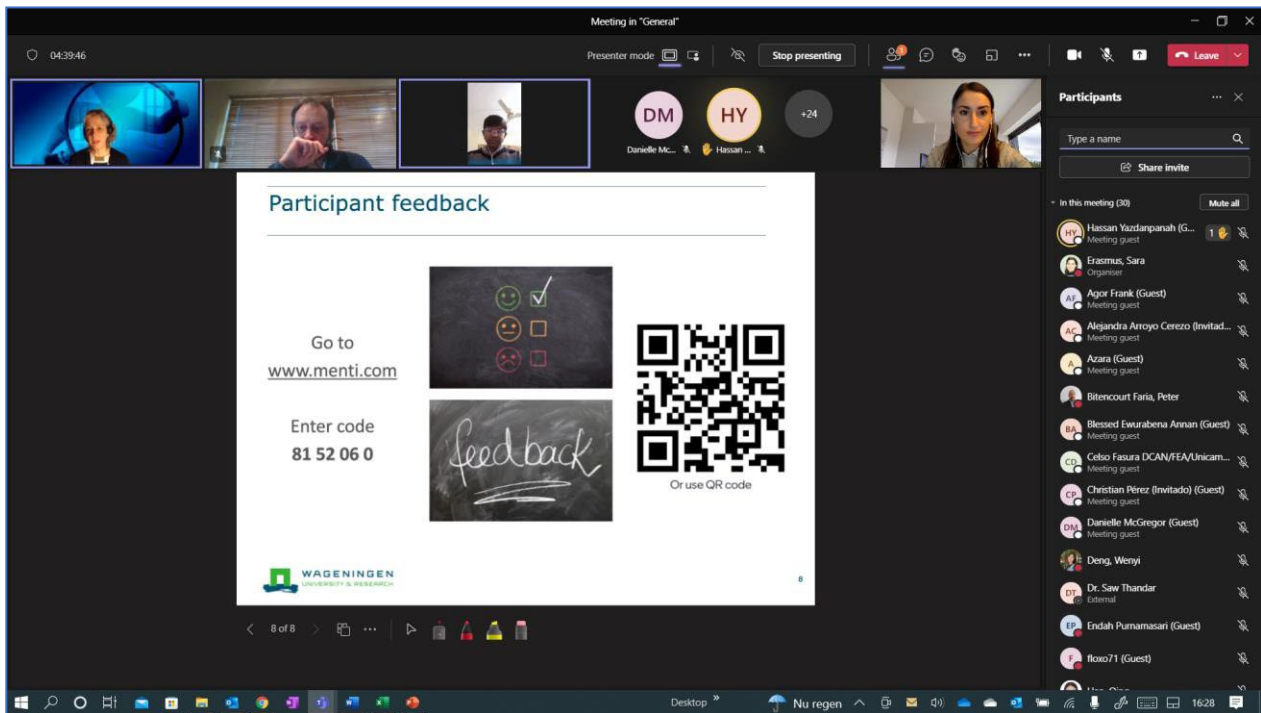
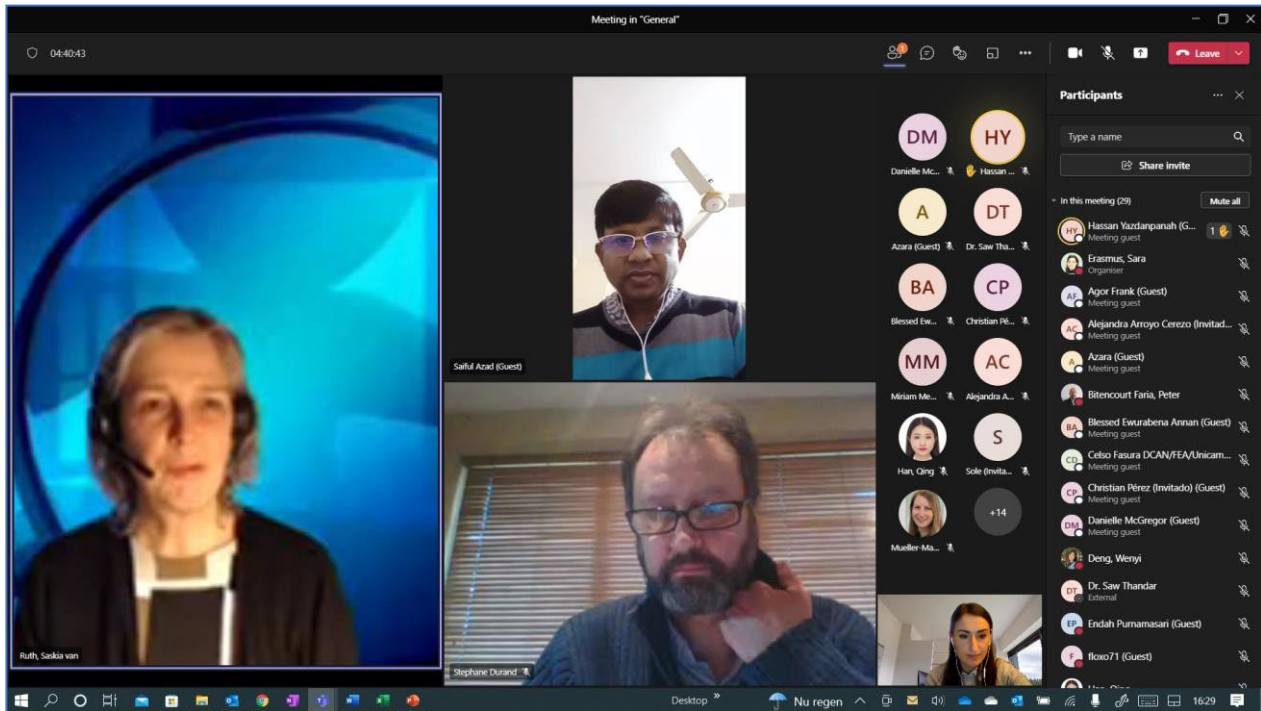
Which of these food fraud categories are relevant and contributed to this case?

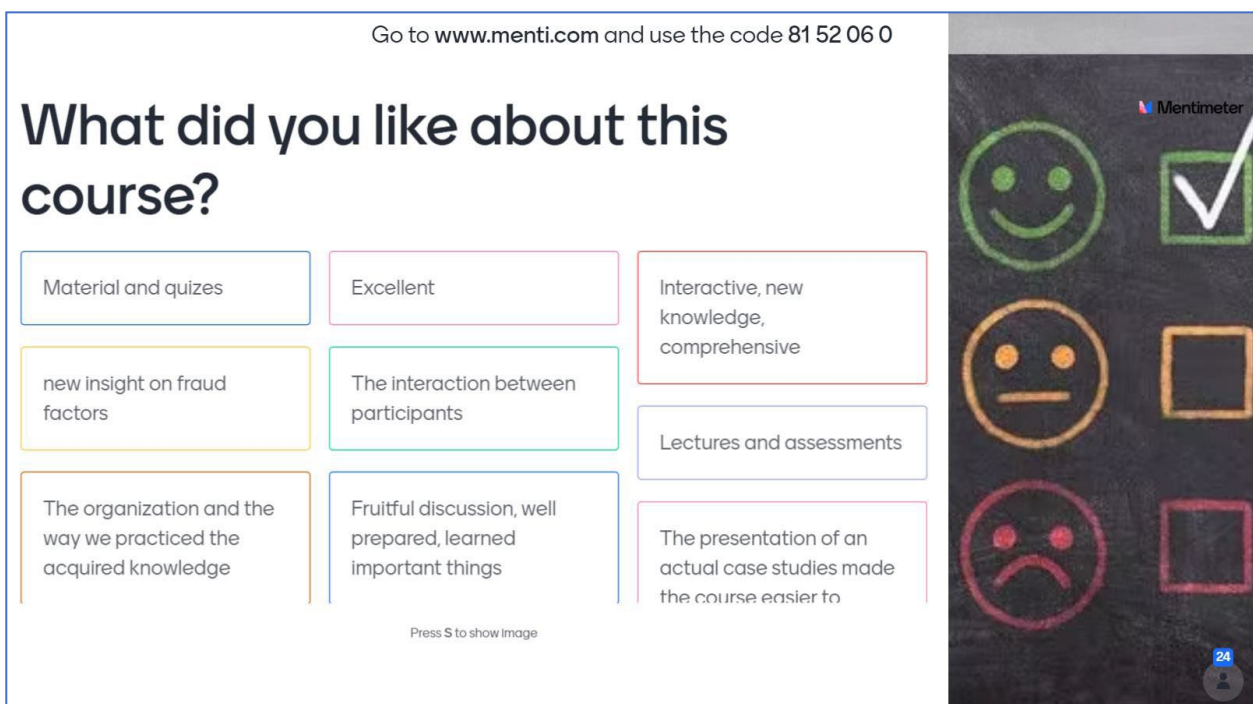
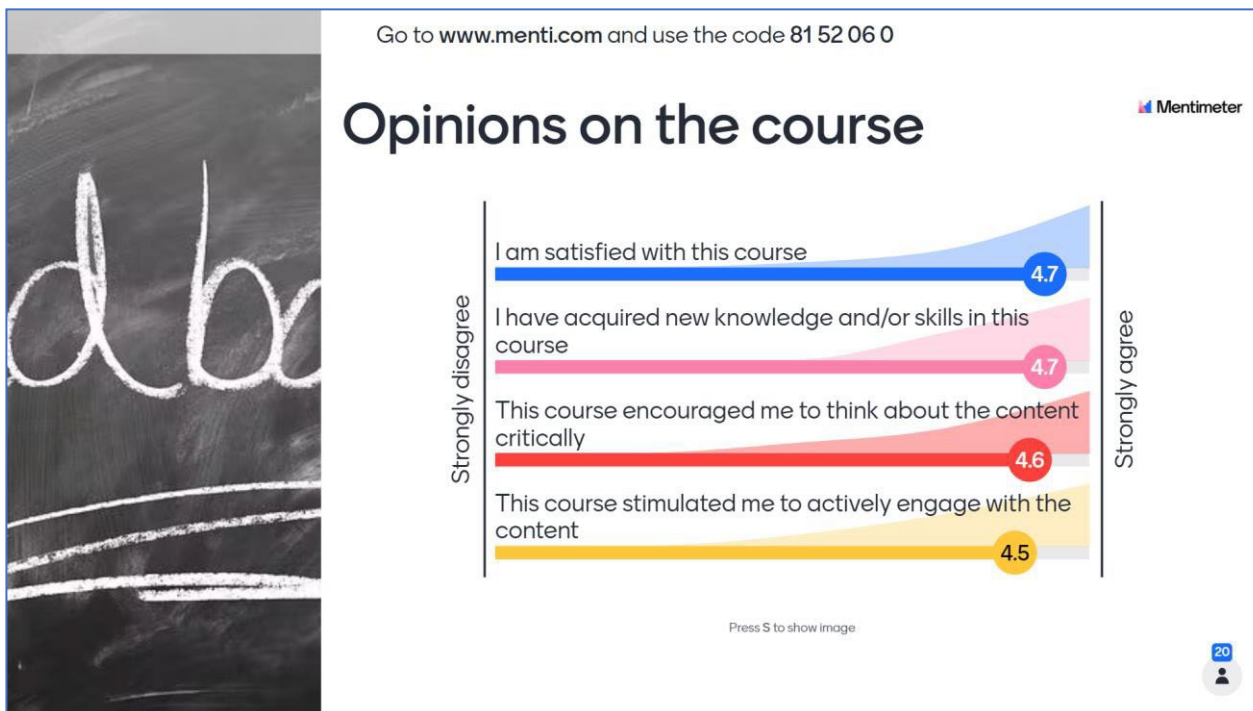
- **Opportunities:**
 - Technical opportunities
 - Opportunities in time & place
- **Control measures:**
 - Technical controls
 - Managerial controls

11



5. Final Q&A and evaluation of the day



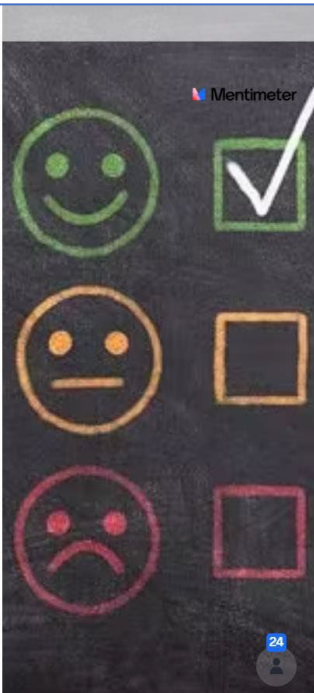


Go to www.menti.com and use the code 81 52 06 0

What did you like about this course?

that I could discuss with other people.	The practical way in which we practiced the acquired knowledge	interesting group meeting
Team work and making a consensus on the specific questions	Different Approaching	The interesting information sources. I really like the movie and the articles. I think that it is a good way to learn
It was educative and I liked the fact that the tutors took their time in	I liked the video more because it gave a broad scope and overview of the	Thank you very much Saskia, Sara, Yuzheng,

Press S to show image



Handouts:

None have been made available directly to registered participants. However, participants could access the two publications via a link that was provided per email before the course.



COMPREHENSION OF FOOD FRAUD VULNERABILITY

VIRTUAL TRAINING COURSE

Date: 16 February 2022 | 9:30-17:00 (CET)



[REGISTER HERE](#)

The virtual training day/course will provide insights into food fraud vulnerability, risk factors and mitigation measures and takes place on Wednesday the 16th of February 2022. Assessment of these risk factors will be illustrated by a study into the Chinese milk supply chain network. Furthermore, participants will also practice to assess food fraud risk factors with a real-life case on exclusive wines. Prior to the course participants are expected to read two scientific publications and to watch a documentary/movie online (materials will be shared after registration). The movie will fully describe the fraud case, and this is needed to conduct/practice the assessment. Microsoft Teams will be our course platform and registrants will receive a link for access in due time.

Teachers: Prof. Saskia van Ruth, Dr. Sara Erasmus, Dr. Yuzheng Yang

9:30	Live lecture in Teams: Introduction to food fraud vulnerabilities <i>Prof. Saskia van Ruth, WUR, the Netherlands</i>
10:30	Coffee break
11:00	Food fraud vulnerability in real-life: An example of food fraud vulnerabilities in the Chinese milk supply chain network <i>Dr Yuzheng Yang, MARS, China</i>
11:45	Live online quiz about the knowledge gained/Q&A <i>Dr. Sara Erasmus / Prof. Saskia van Ruth, WUR, the Netherlands</i>
12:00	Lunch break
13:30	Food fraud vulnerability assignment in online groups <i>Dr Sara Erasmus, WUR, the Netherlands</i> <ul style="list-style-type: none"> • Deconstruction of risk factors and analysis of the famous Sour Grapes case • Prepare for reporting of the results (Infographic, short video, traditional short presentation) • Feedback of results from the groups • Feedback from the trainers • Grading of the reports by all participants (E-book on food fraud to be won!)
16:30	Final Q&A and evaluation of the day <i>Dr. Sara Erasmus / Prof. Saskia van Ruth, WUR, the Netherlands</i>

REPORT: EU-China-Safe training event

Title:

Introduction to Economics for Food Scientists

Date: 11 October 2021

Organizer: Fera Science Ltd., York, UK

Venue: on-line

Agenda of the training event:

Introductions (9:00 AM – 9:10 AM)

1. History of Economics (9:10 AM – 10:00 AM)
2. Economics Themes and Supply and Demand (10:10 AM – 11:00 AM)
3. Market Failure and the Role of Government (11:10 AM – 12:00 PM)

Description of the training content:

This is a training session for non-economists to learn economic fundamentals at the introductory level. The first section (History of Economics) provides a historical overview of the subject of economics, from the stone age to the 20th century. It explores people of key importance to the field of economics, their philosophies and contributions. The second section (Economics Themes of Supply and Demand) let attendees gain a working understanding of economic concepts (i.e., what is a market?), and introduced analytical tools of supply and demand. The Third section (Market Failure and the Role of Government) described how traditional supply and demand market mechanisms may fail, and provided examples related to the wider food industry.

List of participants: 16 trainees






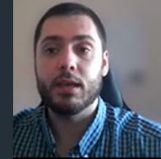
Photos:

Moral Hazard

Moral Hazard and Food Safety

- Many food attributes that may be difficult to identify/evaluate
 - Can a buyer in a grocery store see if spinach is contaminated?
- Buyers must trust that suppliers put in the effort to produce food responsibly
- Avoid moral hazard → expose producers to the costs of unsafe food
 - Traceability
 - Better litigation procedures → Buzby (2001); 30% of foodborne illness lawsuits (1988-97) resulted in compensation
 - Social media and consumer voices



GJ
Glyn Jones

JS
Jan Ma Soek -Sc...

A
Andriati (Gunt)

HY
Yu, Hongwei

VP
Vaso Patsouras

QH
Han, Qing

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WA
William Appleby J...

Go to www.menti.com and use the code 67 21 66 0

Under normal circumstances, when the price of a commodity falls, the quantity demanded will _____



Option	Number of Votes	Correct
increase	7	Yes
remain unchanged	0	No
decrease	2	No
nobody knows	0	No






REPORT: EU-China-Safe training event

Title:

Advance Mass Spectrometry

Dates: 17 January – 11 February 2022

Organizer: QUB, Belfast, UK

Venue: on-site / QUB, Belfast, UK (scientist mobility)

Agenda of the training event:

See attached

Training on using ambient mass spectrometric techniques and follow-up data evaluation.

Description of the training content:

Very good working knowledge of mass spectrometry was required for this training course. An intensive training programme on the use of ambient mass spectrometry (DESI, DART, REIMS coupled to mass spec) to detect the adulteration of food ingredients and commodities was given. This also included training on how to build chemometric models.

List of participants: 1 trainee



<i>Week</i>	<i>Day</i>	<i>Description</i>	<i>Learning Outcomes</i>
1	1	Introduction - expanding mass spectrometry beyond triple-quadrupole mass spectrometry by introducing the concepts around targeted and un-targeted analysis. Time-of-flight, linear trap and Orbitrap instruments will then be introduced and the concept of resolving power of an instrument will be covered. The types of analysis which can be undertaken with each group of instruments will be explained and the benefits & drawbacks of each group of instruments will be covered.	The user should be able to demonstrate an understanding of the idea of resolving power, and to explain clearly what types of analysis each type of instrument is best suited to.
	2 and 3	Sample introduction and chromatography - existing sample preparation and chromatography techniques previously employed by the user will be built upon by exploring 2D liquid chromatography and tandem gas chromatography concepts, with key concepts such as heart cutting being covered in detail. Alternative column chemistries and mobile phases will be covered, such as HILIC chromatography, and the impact on sample preparation that alternative approaches cause will be taught.	The user should be able to clearly demonstrate an understanding on the impact of column chemistry and mobile phases on separation, and begin to show evidence of being able to choose appropriate mobile phases and chromatography columns for groups of target analytes.
	4 and 5	Instrument preparation - the user will be shown by means of practical sessions - how to best setup an instrument to achieve the best overall data quality. This will start by introducing instrument calibration and the importance of assessing instrument stability, before work is undertaken to develop methods capable of producing reliable data that meets the requirements of the user and other end-users of the data.	The user should be capable of calibrating and preparing the instruments they wish to use, and should be capable of beginning to develop methods appropriate for the sample analytes of interest.
2	6 to 8	Data acquisition - using the learning outcomes from week 1, the user will then begin to analyse samples which have been prepared within the laboratory and which have known compounds present at known concentrations (spiked matrix samples). The user will be given suggestions on possible contaminant classes and aided in developing methods and using appropriate settings for those contaminant classes.	The user should be capable of acquiring data that is suitable for their intended use, and to justify their decisions in choosing key aspects of data acquisition such as scan speed.
	9 and 10	Data processing - following on from the data acquisition, the user will be trained in the use of vendor specific and open-access data processing tools. Targeted and untargeted data processing workflows will be covered and the ability to cross-over between the two workflows explained.	The user should be capable of basic processing of their own acquired data, and should be capable of identifying the spiked compounds that were introduced to the samples used for training.
3	11 to 13	Advanced data processing - expanding beyond the use of vendor specific and open-access data processing tools into the area of chemometric modelling, introducing concepts such as spectral fingerprinting and machine learning. Coverage will begin by looking at key concepts such as non-discriminatory modelling using PCA models before expanding to cover discriminatory models such as PLS-DA and LDA models. The requirements for successful modelling in terms of data acquisition quality will be explained in detail.	The user should be able to explain some of the more basic aspects of chemometrics, and show a good understanding of the data acquisition requirements for successful chemometric modelling analysis work.
	14 and 15	Beyond LC-MS - in preparation for a final week making use of alternative platforms, elemental analysis and ambient mass spectrometry systems will be introduced to the user. The uses for each type of system will be introduced, before the advantages and disadvantages of each type of analysis are covered.	The user should be able to describe key benefits and downsides of elemental and ambient mass spectrometry platforms.
4	16 and 17	Elemental analysis - the use of ICP for elemental analysis will be introduced, and will cover the key aspects of elemental analysis, such as digestion of samples, choice of which elements to analysis, and looking at both targeted and untargeted elementomics analysis approaches.	The user should be capable of explaining the use of elemental analysis techniques, including the advantages and disadvantages of this technique.
	18 and 19	Ambient mass spectrometry - ambient mass spectrometry platforms will be introduced, focusing on REIMS, DART, ASAP, DESI and MALDI platforms available within the ASSET Technology Centre. Theory of each system will be followed by a hands-on session making use of each system. The user will be given the opportunity to test samples of interest to them, data processing of results using the previous data processing training will then be undertaken.	The user should be capable of explaining the advantages and disadvantages of ambient mass spectrometry in general, and of each technique in particular. The user should be capable of making a decision on the best technique to use for given sample types.
	20	Review - for the final day of training, a review of the four week training period will be undertaken, summing up all of the training that has been undertaken. Training materials, results and methods will be transferred to the user for their further use at their home institute.	The user should have completed their report to EU-China Safe concerning the training program at this stage (If required).

REPORT: EU-China-Safe training event

Title:

Analytical strategies for multi-analyte / multi-matrix screening for pesticide residues, mycotoxins and plant alkaloids

Date: 1-28 February 2022

Organizer: VSCHT, Prague, Czech Republic

Venue: on-site / VSCHT, Prague, Czech Republic (scientist mobility)

Agenda of the training event:

A theoretical and practical training in method development for pesticide residues, mycotoxins and plant alkaloids screening in various matrices using methods based on LC/GC - tandem high-resolution mass spectrometry (MS/MS, HRMS/MS) was offered.

Training covered experimental design, demonstration of various instrumental applications (hands-on), data processing and interpretation, validation and QA/QC issues; approaches for discovering and identification of 'unknown' residues was also discussed.

Description of the training content:

The student was introduced to the following methods:

1. Method for the determination of more than 450 pesticide residues using ultra-high performance liquid chromatography coupled with tandem mass spectrometry (U-HPLC-MS/MS)
2. Method for the determination of 57 mycotoxins and their metabolites using ultra-high performance liquid chromatography coupled with tandem high-resolution mass spectrometry (U-HPLC-HRMS/MS)
3. Method for the determination of plant alkaloids using ultra-high performance liquid chromatography coupled with tandem mass spectrometry (U-HPLC-MS/MS)

Apart from the theoretical knowledge of the field (toxicology, legislation, etc.), the student has learned (on-hand) how to prepare samples of various matrices (fruits, vegetables, cereals, herbal supplements and matrices with high fat content) for the analysis (modified QuEChERS extraction was used), operate different instrumentations and evaluate the obtained data (including comparison with applicable legislation, if available).

List of participants: 1 trainee



Photos:

