Welcome to the third FoodIntegrity Newsletter. This five-year European project is now entering its core phase with many activities in progress, exploiting the competence and energy of its 38 partners from Europe and China.

In this edition, I hope to have given you a flavour of what is to come in the battle against food fraud and adulteration: from analytical to paper trail approaches, from databases and how to use them to consumer opinions and behaviours. One of my key roles in being an industry partner in the project is to fully understand the opportunities that this multi-faceted project presents to food businesses. A recent highlight for me was the successful FI satellite event at the Milan EXPO, conceived as an opportunity for stakeholders (with focus on Italian industries) to share common relevant issues combined with best practices and to develop collaborations with international experts.

As a food scientist, I particularly enjoyed RAFA 2015 and taking part in the FI Open Days that took place there, where hundreds of attendees were provided with demonstrations of the state of the art in food authentication. As a potential end-user, I am eagerly awaiting the release of the FI Knowledge Base Web-based Tool that, I hope, will solve my problems in terms of which method to use for a particular food fraud problem.

2016 will also be the year of the launch of several new exciting sub-projects identified by stakeholders, including other industry colleagues, which address gaps in our current knowledge.

Finally, we have introduced an “Opinion Corner” in this newsletter, where, this time, we speak about how the analytical methods are not always the key to solve all problems related to fraud. There are many different ways by which you can get involved with the project, meet with us and get to know our strategy for protecting the integrity of food production in Europe! Ciao!

Michele Suman, Barilla Advanced Laboratory Research, Guest Editor

Project highlights:

Agribusiness: Science & Industry to talk about fraud - Milan (Lodi) - EXPO2015 joint initiative – Summary:

The Italian office of the UK Science Innovation Network (SIN Italy) organized, in collaboration with the FoodIntegrity European Project and Parco Tecnologico Padano (PTP), a two-day workshop which took place on 9th and 10th of September at PTP in Lodi (Milan). The event, a satellite initiative to Milan EXPO, involved over 60 participants drawn from leading businesses, scientific organisations and academic establishments from the UK, Italy and North America. Its aim was to share best practice and boost exchange and collaboration opportunities between UK and Italian scientists, as well as other European and international colleagues.
The first day focused on sharing and debating the latest research methods and processes for combating food fraud and demonstrating the state-of-the-art tools for assuring the authenticity of food products.

The second day was opened up to Italian food companies that presented how current research is developing practical mitigation tools. This was followed by an interactive exercise led by the UK Food and Drink Federation (FDF) encouraging participants to consider vulnerabilities to specific supply chains, with a view to protect their businesses from food fraud by using information and intelligence to inform their risk assessments and assurance actions. The FDF Five-step Guide on Food Authenticity was presented to participants who were then asked to apply each of the five steps (Map Your Supply Chain; Identify Impacts, Risks and Opportunities; Assess and Prioritise Your Findings; Create a Plan of Action; Implement, Track, Review and Communicate) to realistic scenarios.

The open discussion with food industry representatives from different food chains (oils, eggs, retailers, ...) started in Lodi and continued directly in collaboration with FoodIntegrity Work Package 10 (Industrial Integration), highlighting some interesting key points such as:

- The vulnerability of “highly fragmented” chains (with a high number of steps, players, geographical areas...)
- The absence, in most cases, of implementation of rapid screening procedures, especially in the case of SME
- The stable recourse to the support of external labs for outsourcing confirmatory analytical measurements
- The need to better establish separated assessments and prevention models for safety and authenticity issues
- The desire to achieve a standardized data base for food profiling sharing the data into the scientific community
- The parallel need to find confidential channels for knowledge exchange
- The suggestion to make efforts on reducing the economic impact of “databases re-construction” year by year
- The close future direction to transfer many food testing, still nowadays, at the “research stage” into a “routine scenario”

**USEFUL LINKS**


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**FoodIntegrity OPEN DAYS at RAFA 2015 – A big success!**

1st FoodIntegrity Open Days were organised on the 4-5 November 2015, during the 7th International Symposium on Recent Advances in Food Analysis (RAFA 2015), held from 3rd to 6th November 2015 in Prague, Czech Republic.

The aim of the open days was to provide participants with a demonstration of the some of the latest outputs from project and to let participants know how to get involved. The audience were exposed to live tasting, video, slide shows and live demonstrations of the latest methods for authentication of spirits.

Participants learned more about:

- FoodIntegrity Network and how to get involved
- FoodIntegrity Knowledge (data)base
- rapid methods for authentication of branded spirits
- an industrial perspective of food chain vulnerabilities vs current analytical methods and technologies
- training and dissemination activities in progress
RAFA also included a workshop on “Vibrational spectroscopy and chemometrics for monitoring of food and feed products and contaminants’ detection”. The aim of this workshop was to give an overview of the theoretical and practical issues for the right applications of spectroscopic techniques in food and feed quality control, detecting non-conformity and subsequently identifying targeted or untargeted adulterants and contaminants among others.

Finally, an intriguing RAFA 2015 Filmed Roundtable Discussion was hosted by New Food Journal on the topic of contaminants and novel approaches in food analysis, also covering aspects directly related to FoodIntegrity.

**USEFUL LINKS**
FoodIntegrity first project results:

FoodIntegrity Knowledge Base: ready to start!

The FoodIntegrity Knowledge Base Web-based Tool will provide a wealth of information on the type, frequency, and impact of various food fraud practices together with recommended analytical strategies to deal with the issues. The overall structure is now in place and the task of entering available information is underway. The search engine for the Knowledge base has now been designed. When looking for information, the stakeholder will be able to select a food category from a drop-down list, enter a CN code and/or specify a type of fraud (dilution, substitution, etc.) or food integrity issue (geographical origin, product composition, etc.). It will also be possible to find information by using a wildcard search and searching for multiple words separated with AND / OR / AND NOT in upper case. A simple click on the “Get Results” button will bring up all relevant data entries in tabular format, from which it will be possible to display individual or previously selected entries. An additional click will export the selection to a PDF file. Work will continue over the next few months to compile initial data into the Knowledge Base. The aim is to hold a live demonstration at the 3rd FoodIntegrity conference in Prague in April 2016.

USEFUL LINKS
- FI Knowledge Base – an update on how work is progressing
  (https://secure.fera.defra.gov.uk/foodintegrity/secure/downloadFile.cfm?id=350)

FoodIntegrity Call for New Research procurement update:

Call Opened: 24th June 2015
83 initial expressions of interest
Call Closed: 14th August 2015
27 proposals submitted
- 2 proposals - FI01 - Standardisation and harmonisation of untargeted food integrity methods
- 7 proposals - FI02 - Innovative approaches to assure the integrity of complex foods
- 7 proposals - FI03 - A feasibility study of how information can be shared along the supply chain to identify risks to the integrity of food
- 11 proposals - FI04 - Rapid, on-site, cost effective methods for feed/food fraud detection

Expected Results: Late December 2015
Start Date – February/March 2016

FoodIntegrity “Opinion Corner”:

“When all you have is a hammer, everything looks like a nail – when analytical methods are not enough...”

This was the slightly provocative title of the presentation given by FoodIntegrity WP6 leader, Petter Olsen, at the RAFA conference in Prague in the beginning of November 2015. The ‘hammer’ in the title refers to the ‘golden hammer’ approach formulated by Maslow and others, and in the context of food authenticity, it refers to the fact that that sometimes the starting point seems to be the methods we know rather than the problem we’re trying to solve. The presentation included an overview of food fraud types and food attribute types, and showed that while analytical methods can identify many types of food fraud and false claims, they can by no means identify all. A common problem is in thinking that food fraud is always closely connected to food safety, and this is not necessarily true. For example, it is estimated that between 10 and 30 percent of all captured fish products traded in the world originates from Illegal, Unreported or Unregulated (IUU) fisheries, and records are routinely falsified when this fish enters the legal supply chain. While this is a big problem in relation to stock sustainability and is an economically motivated fraud, there is little reason to suspect that there are food safety issues associated with this fraud and it is difficult to envisage analytical methods which could identify the products originating from IUU fisheries. The same goes for many claims relating to exact geographical origin (including country), original volume or weight (relevant when quotas are involved), owner and batch number as well as many of the properties relating to organic production, sustainability or ethics. While there is a physical or biochemical component associated with some of these claims, it is by no means true for all of them, and analytical methods cannot really be used to identify fraud or misdescription related to these attributes. The presentation outlined some complementary methods based on data recorded in the supply chain; specifically input-output analysis (matching for instance stated export weight or volume with corresponding stated import weight or volume) and mass balance.
accounting (highlighting processes with unrealistically high claims when it comes to yield). These methods will be used and further developed in the FoodIntegrity project and they will become part of the integrated anti food fraud toolbox that will be made publicly available towards the end of the project.

**USEFUL LINKS**
- Solving Food Frauds – Food Quality News

Note that the FoodIntegrity seafood sampling citizen science experiment is currently running. Volunteers from all over Europe take samples when they eat seafood at restaurants, note down the stated species, and send the samples for analysis and verification. Please contact Miguel at AZTI if you want to participate; mmpardo@azti.es.

### Dissemination activities:

**FoodIntegrity & FAO/IAEA Coordinated Research Project on “Implementation of Nuclear Techniques to Improve Food Traceability”**

On 26-30 October 2015 in Kampala (Uganda), The Food and Environmental Protection Laboratory of the Joint FAO/IAEA Division in Vienna, Austria, (active in FoodIntegrity WP1, WP2 and WP10) organized the final research meeting of a 5-year international research project focusing on food traceability and safety, in particular the development and implementation of nuclear technologies for the verification of the authenticity of food.

(https://secure.fera.defra.gov.uk/foodintegrity/secure/downloadFile.cfm?id=351)

**FoodIntegrity at the “2nd PARMA NANO-DAY” SITEIA/University of Parma Workshop**

FoodIntegrity opened a window on nanotechnologies and food traceability/authenticity implications in the Workshop “2ND PARMA NANO-DAY”, 3-4 December 2015, in the Auditorium of the Science Campus – University of Parma. The workshop was organised in three Scientific Sessions: (i) Technological applications; (ii) Agri-food, Environment, Biotechnologies; (iii) Health and wellness.

(https://secure.fera.defra.gov.uk/foodintegrity/secure/downloadFile.cfm?id=354)

**3rd FoodIntegrity conference ‘Assuring the integrity of the food chain: Fighting food fraud’**

The two day conference will focus on the latest research outputs from the project and beyond, including:

- **New project activities** on (i) Non targeted analysis, (ii) Complex foods, (iii) Transparency along the food chain, (iv) Rapid methods
- **Food Fraud System** in the EU (and beyond – worldwide network)
- Demonstration how a European knowledgebase on analytical methodology and databases for food authenticity can be exploited by stakeholders
- **Analytical tools for food authentication**

In addition, series of workshops will be organised to include: (i) **Food Crime, occurrence, motivations and mitigations**, (ii) **Industrial applications for assuring food authenticity** (technical workshop on analytical approaches for food authentication), (iii) **Authenticity of herbs and spices**, (iv) **Citizen science potential approaches to food integrity**

For information on the conference please check the conference website (www.foodintegrity2016.eu) regularly or contact us at foodintegrity2016@vscht.cz.

**First results of the FoodIntegrity research published** by Yamine Bouzembrak and Hans J.P. Marvin on ‘Prediction of food fraud type using data from Rapid Alert System for Food and Feed (RASFF) and Bayesian network modelling’ (Food Control (2016) 61, 180-187).

Review paper ‘Review of validation and reporting of non-targeted fingerprinting approaches for food authentication’ by Janet Riedl, Susanne Esslinger and Carsten Faulh-Hassek (Analytica Chimica Acta (2015) Volume 885, 17–32) cited FoodIntegrity as one of the projects that contributed to formulation of these approaches.

**Training activities**

For the efficient knowledge transfer of developed technologies and other information generated within the project framework, training network will be established, consisting of a comprehensive training program, a young scientist mobility program, establishing a training school, and the organisation of a series of workshops. The training program will be launched soon. If you wish to be informed on opportunities offered by the training program, please register for project **COMMUNICATION** here.
How to get involved?

Do you wish to receive information about news, progress and events related to the FoodIntegrity project?
Please register for the project COMMUNICATION here.

Do you wish to become a FoodIntegrity stakeholder and be able to affect or be affected by FoodIntegrity project activities?
Please register as a FoodIntegrity STAKEHOLDER to the FoodIntegrity Network here.

Do you wish to become a FoodIntegrity expert and be called in for an advice and/or contribution to the project activities?
Please register as a FoodIntegrity EXPERT to the FoodIntegrity Network here.

The FoodIntegrity Network is a platform for stakeholders and experts to exchange knowledge and expertise in food authenticity, safety and quality; to rapidly share information and intelligence about suspected and actual incidents to protect consumers and food products from damaging effects of food misdescription. The overall objectives of FI Network is to bring together producers, distributors, processors, retailers, regulators, researchers enforcers, consumers to assure the integrity of the food chain.

Dates for diary:

FoodIntegrity Associated events:

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<th>Date</th>
<th>Event Details</th>
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<tr>
<td>3rd FoodIntegrity conference</td>
<td>‘Assuring the integrity of the food chain: Fighting food fraud’</td>
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<td>6-7 April 2016</td>
<td>Prague, Czech Republic</td>
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<tr>
<td>Training in Vibrational Spectroscopy and Chemometrics</td>
<td>19 February – 4 March 2016</td>
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<td>CRA-W Henseval Building Gembloux, Belgium</td>
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External events:

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<tr>
<td>18th International Union of Food Science and Technology (IUFoST) World Congress</td>
<td>21–25 August 2016</td>
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<tr>
<td>1st Food Chemistry Conference</td>
<td>‘Shaping the Future of Food Quality, Health and Safety’</td>
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<td>30 October – 1 November 2016</td>
<td>Amsterdam, Netherlands</td>
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<tr>
<td>‘World Mycotoxin Forum meets IUPAC’</td>
<td>6-9 June 2016</td>
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<td>Winnipeg, Canada</td>
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We hope you have found this e-Newsletter interesting and informative. We would welcome your views on any of the issues covered. Please email foodintegrity@fera.co.uk. Please feel free to distribute this FoodIntegrity e-Newsletter to other interested parties.

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