Evidence Proforma
Food Authenticity Centres of Expertise

Fera Science Ltd

What is your organisations particular area(s) of expertise in food authenticity testing?
Fera is a multi-disciplinary scientific organisation with several different areas of expertise in the food authenticity arena. We perform food authenticity analysis using both routine published methods and bespoke research based solutions. In the field of DNA analysis we offer conventional DNA analysis (qPCR, DNA barcoding), portable in field analysis and cutting edge research utilising Next Generation Sequencing (NGS). In the field of chemical analysis we have expertise in the application of a range of analytical technologies applied to a wide range of commodities including trace metal and stable isotope analysis, proteomic analysis, chemical profiling and non-targeted analysis utilising high resolution mass spectrometric and nuclear magnetic resonance. Fera has a significant amount of experience in the development and implementation of robust, validated methods.
Please highlight your organisations key skills and capabilities in this area and provide a justification as to why you feel it should be regarded as a Centre of Expertise?   In particular you should focus on highlighting your key analytical skills and capabilities and any accreditation and how you ensure fitness for purpose testing. (250 words max)
Fera has over 15 staff that are currently active in food authenticity research. The commodities and the techniques used are varied and provide a unique offer in the provision of authenticity based solutions. Furthermore, Fera's wide expertise in other food and plant analysis provides us with novel avenues for food authenticity verification. We are experts in high resolution non-targeted profiling analysis for both chemical and biological molecules. In particular, we exploit high resolution mass spectrometry, nuclear magnetic resonance and next generation sequencing in the field of food authenticity research. We perform trace metal and stable isotope analysis and have linked this with advanced statistical and geographical mapping expertise to create geographical origin based solutions. Fera staff developed qPCR DNA meat speciation methods, these methods were ultimately used by other researchers to identify horsemeat in the supply chain. Fera offer accredited (ISO17025) stable isotope testing services for the adulteration

of juice and spirits. Fera provides the UK data for the EU wine databank. Furthermore, we have developed global databases that are able to capture food fraud events (Horizonscan) and combined statistical analysis and geographical origin information to develop tools to confirm product origin.

Briefly highlight your experience in method validation, data interpretation and evaluation and the reporting of analytical results? (150 words max)

Method validation, data interpretation and evaluation and the reporting of analytical results are at the core of Fera's analytical work. Fera has been instrumental in the development of guidelines for method validation and the interpretation of results and leads the international effort to standardise analytical techniques through its participation in forums including ISO and EU and work groups. Fera has validated hundreds of methods, both in house and internationally through collaborative trials. Fera currently has over 100 ISO17025 (UKAS) accredited methods.

Staff at Fera have published over 100 peer reviewed scientific articles in the field of food authenticity.

Please provide brief details where possible, of your experience in dealing with complex technical authenticity challenges and evidence of your ability to provide solutions. (150 words max)

The determination of geographical origin is a complex and challenging task. Fera can demonstrate geographical origin solutions that employ trace metals and stable isotopes (e.g. geographical origin of beef using isoscapes), nuclear magnetic resonance (e.g. determination of chemical biomarkers of Corsican honey) and next generation DNA sequencing (e.g. geographical origin of oysters).

Speciation of gelatine, an animal by-product that contains no DNA was not possible until Fera developed methods based on proteomic analysis for gelatine speciation.

Are you willing to provide advice on your areas of expertise and assist others through partnership working and sharing of information? Outline briefly your experience in collaborative working and how you could contribute to enhancing the UKs standing in the field of authenticity testing. (150 words max)

Fera is prepared to provide advice to others in our particular areas of expertise and where appropriate, share information. Fera has a track record in national and international collaboration, it regularly leads large international research activities on food authenticity such as: FoodIntegrity (€12M) ,TRACE (€20M), and regularly networks and collaborates with other leading organisations throughout the world concerned with fighting food fraud, eg Defra, FSA, DG Agri, DG SANCO, EU JRC, Bfr. Fera has a history developing and implementing cutting edge technology through dedicated technology transfer activities with end users. It has led many international method validation studies concerned with food authenticity, e.g. spirit drinks, olive oil, gelatin, meat speciation.

In summary, Fera makes a major contribution to developing and enhancing the UK science base on food authenticity and ensuring that innovative technologies are developed and implemented in the UK to help fight food fraud. Fera already contributes to maintaining the UK at the forefront of authenticity by the development of cutting edge techniques. Ongoing activities include dissemination at conferences and international meetings, at training events and in peer reviewed articles. Fera is committed to enhancing the UK analytical offer for food authenticity and actively works to extend its network of collaborators and partners, through high quality applications for funding.

Please prove a brief statement of your capabilities to be included on the virtual food authenticity network portal (50 words max)

Fera is a multi-disciplinary scientific organisation that delivers food authenticity solutions and surveillance to combat food fraud.
We specialise in the determination of geographical, production and species/varietal origin using an array of cutting edge technology to deliver smart and robust solutions to end users.