

Evidence Proforma
Food Authenticity Centres of Expertise

Genon Laboratories

What is your organisations particular area(s) of expertise in food authenticity testing?

Genon Laboratories is a UKAS (ISO17025) accredited analytical laboratory specialising in molecular and immunological detection of contaminants and adulterants in foodstuffs. With specific reference to authenticity testing our core area of expertise is the detection of meat, plant, fish and crustaceans using endpoint PCR; real time-PCR, PCR-sequencing and Next Generation Sequencing based technologies. Our expertise includes both molecular diagnostic development and ISO17025 accredited testing (PCR and real-time PCR under UKAS flexible scope). Additionally we have the capability and expertise to perform research & development particularly in the area of diagnostics.

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)

Our technical and research staff is headed by the founder of the company Dr Mike Bromley. Mike currently also holds a position as Lecturer at the University of Manchester. His research team in Manchester specialises in, amongst other things, the development of diagnostics for the food sector. All of the technical and research staff at Genon are degree or PhD level scientist. They have been trained extensively in the use of ELISA based immunological diagnostics as well as PCR, realtime PCR and next generation sequencing. We are one on only a few commercial laboratories to run two ISO17025 (UKAS) flexible scope programs. Our accreditation covers the use of ELISA based diagnostics (Kit based) to detect food contaminants and toxins and Real-time PCR (Both kit and in-house developed) diagnostics to detect contaminants. Our current scope covers the detection of a range of meat species, GMOs, allergens and toxins.

We follow a robust process for ensuring 'fitness for purpose' using a system based on the Eurochem guide. This process is enshrined in our flexible scope documents and includes processes to evaluate identity (selectivity/specificity), limit of detection (For both quantitative and qualitative methods) and quantitation, accuracy (trueness, repeatability precision, reproducibility precision) and where necessary ruggedness of an assay. Where possible, criteria are laid down within our flexible

scope documents that set appropriate limits for accuracy, identification of appropriate reference materials and limits of detection/quantitation to ensure assays are fit for purpose.

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

We have developed and validated a number of novel diagnostics that are or are about to be ISO17025 (via UKAS) accredited. Particularly we have developed PCR and real-time PCR based diagnostics to identify meat (including but not limited to chicken, sheep, goat, cattle, pig, horse, buffalo) fish (including various different salmon, cod and tuna species). Additionally, in combination with the University of Manchester, we have developed a novel next generation sequencing methodology using technology based on microbial metagenomics tools that allows the detection of up to 22,000 species simultaneously.

Both data interpretation and reporting are key concepts covered by the ISO17025 standard and pervade the ethos of the company. The way the outputs of analytic tests are interpreted and reported is defined in standard operating procedures which dictate that all analysis and reporting is cross checked. We are proud of our interaction with our customers particularly helping them understand their results and their significance particularly with reference to method uncertainty and existing legislation.

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)

We have significant experience in dealing with complex technical authenticity challenges. This is highlighted in our recent development of a novel next generation sequencing (NGS) technology for the detection of multiple thousands of potential contaminants simultaneously. Via a Technology Strategy Board funded research project, supported by the food standards agency, Dr Mike Bromley lead a team of researches that performed molecular analysis to identify a common region with the genomes of mammalian, fish, molluscs, avian species. This was used to design a diagnostic that employs semiconductor sequencing technology and advanced bioinformatics processes to detect multiple species. We can now offer an authenticity test that means that clients no longer have to pre judge what contaminant may be present in their food; we detect them all in the same test.

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)

Yes we are prepared to offer our advice on our areas of expertise and share information. Genon currently contributes to the Manchester Food Allergy Network.

This network comprises diverse groups who are interesting in advancing and improving food allergen detection through sharing experiences, capabilities and knowledge (where commercially possible). This group headed by Prof. Clare Mills includes University groups, public analysts, diagnostic kit manufacturers and service laboratories.

We are well placed to provide advice and critical evaluation on novel technologies (particularly molecular technologies) and believe our knowledge of Next Generation Sequencing could be communicated effectively within this consortium.

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

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