Areas of research interest

Areas of research interest (ARIs) give details about our research priorities.

A strong, scientific, evidence-based approach has been, and will always be, integral to the FSA's approach to protect public health from risks which may arise in connection with the consumption of food (including risks caused by the way in which it is produced or supplied) and otherwise to protect the interests of consumers in relation to food.

We use science and evidence to tackle the challenges of today, to identify and address emerging risks for the future, and to ensure the UK food and feed safety regulation framework is modern, agile and represents consumer interests.

The FSA strategy 2022-2027 sets out how we base our decisions on science and evidence, and produce insights that inform our work and the policy and practice of other organisations, operating across the food system. This includes expert advice provided by our independent Scientific Advisory Committees and Science Council, and making all of our research outputs publicly available, as part of our commitment to being open and transparent.

The issues influencing food and feed safety?and?standards,?and their impact on consumers in the food system are wide ranging, meaning our Areas of Research Interest (ARI) are broad. Our ARI are the research questions we most?want?to address to promote and protect public health by ensuring that UK consumers are well informed and have sustainable access to foods which are safe, traceable, and properly labelled.

We first published our ARI in 2017 and they have been refreshed periodically to ensure they are relevant to the evolving priorities of the organization. This latest list below represents the current needs of the FSA.

By disseminating and communicating our updated ARI, we aim to grow our evidence base by engaging with others and thus be better prepared for the future. Specifically, we are looking to create opportunities to:

- build and extend collaborations with other Government departments, the devolved administrations, local authorities, industry, consumers (and groups that represent them) to enable a full understanding of the food system and the impact of interventions
- develop joint initiatives with UK Research and Innovation (UKRI) and other funders
- engage with universities, research institutes and other research providers working at the cutting-edge of innovation, by understanding what existing research is ongoing, commissioning new research, co-designing new projects and supporting fellowships and scholarships to enable them to demonstrate significant impact on the food system and consumer protection
- undertake research and development to assure high standards for food safety sampling and testing, including within the Official Control Laboratory system, supported by the UK's Food and Feed National Reference Laboratories
- contribute to prioritisation activities of partners including those within the UK Food Safety Research Network and other research and innovation networks

> A strong, scientific, evidence-based approach has been, and will always be, integral to our mission to ensure food is safe and what it says it is, as well as helping consumers to make informed choices about food. Our Areas of Research Interest highlight a number of critical research questions for FSA and we look forward to partnering with researchers from a wide variety of disciplines in order to tackle them.
> FSA Chief Scientific Adviser, Professor Robin May

Our ARI are not a direct invitation to tender. The department's research calls are published and procured through?a tender portal?and details of new UK Governmental research tenders are also available on?the contract finder website.

We encourage researchers to contact us with summaries of recent findings or plans for research that they feel is relevant to the FSA's remit. We may also provide expressions of support for applications to other funders describing research that will deliver evidence relevant to FSA priorities.

To discuss any of the information above on science engagement with the FSA and our ARI, please contact?us via email.

Research priorities

We have identified four research priorities, which align to our coordinated research and evidence programmes. Within each of these priorities, there are ARI which are high-level research questions, and then under each of these ARI, we have more detailed questions, giving a detailed view of specific areas where we seek to advance our knowledge and/or improve our scientific capabilities.

Research priority one: foodborne disease and antimicrobial resistance

Foodborne disease (FBD) is a major public health risk with 2.4 million individual illnesses and more than 16,000 hospitalisations per year. It imposes an annual burden on society equivalent to £9.1 billion. The majority of human foodborne disease is caused by a handful of pathogens (including norovirus, campylobacter, salmonella, Shiga toxin-producing Escherichia coli (STEC) and listeria) which, in most cases, enter the food chain from farmed animals or the environment.

In addition to FBD, the agri-food supply chain also poses a risk for the spread of antimicrobial resistance (AMR). Addressing the public health threat posed by AMR is an ongoing strategic priority for the UK and the Government has recently published its new 5-year AMR National Action Plan (NAP) 2024-29, which sets out actions to slow the development and spread of AMR.

The overarching aim of this research priority is to provide evidence to enable the FSA to better control the spread of FBD and AMR within the food supply chain. For both threats, taking a 'One Health' approach is important, to understand the sources (e.g. livestock) and routes (e.g. food and environment) of infection and ultimately the impact (e.g. on humans).

As well as characterising new and emerging threats, we need to build our current understanding as to the attribution, prevalence, and nature of existing FBD and AMR risks, filling key evidence gaps which will support improved control measures and enhance food hygiene policy. We are also seeking to build capability in this area through development of new surveillance methods, which in turn can support the FSA's work on trade and border inspections, as well as supporting broader disease and incident management.

Our ARI for this priority:?

- driven by global changes in the food system, what new pathogens or strains are likely to become prevalent over the next five years and what mitigations are needed to avoid food safety issues?
- which emerging methods (for example, diagnostics, genomics, and data analytics), will help the FSA most effectively detect sources of infection or the emergence of new microbiological hazards in the food supply chain?
- what are the drivers of poor food hygiene behaviours in households and food businesses, and how can food safety knowledge be best translated into safer practices?
- what is the food safety risk posed by AMR, now and in the future, and how can the FSA best monitor changing patterns of AMR risk and ensure that consumers and businesses understand what they can do to reduce risk?
- what are the most effective strategies or interventions that can be deployed by food businesses to control the spread of pathogens and reduce foodborne disease?

Research priority two: chemical, radiological and food hypersensitivity risks

Single exposures to food and feed hazards can give rise to severe ill health and for certain chemical, radiological and food hypersensitivity hazards, repeated exposures from our diet can also build to contribute to long term health effects.

Such hazards may naturally be present within certain foods and feed or may occur from contamination, for example, from the production environment or from manufacturing processes. In the UK, up to 2.4 million adults are living with a diagnosed food allergy, and 600,000 people have Coeliac Disease and the FSA wants to improve the quality of life for people living with food hypersensitivities and support them to make safe and informed choices to effectively manage risk.

The overarching aim of this research priority is to provide evidence to support effective risk management decisions by ensuring the risk analysis process is informed by independent, science-led risk assessment and socio-economic analytical evidence.

Our ARI for this priority:?

- what new analytical tests or novel approach methods can we use to assess these hazards and their impact on consumers?
- how can we use business and consumer behaviour insights to deliver better food hypersensitivity outcomes and improve risk communication?
- how will dietary and other consumer-driven shifts in the food system change chemical, radiological and allergen risks over the next 5 years and how can we better anticipate them?
- are there specific safety risks associated with changes in the food chain that are intended to have environmental benefits (such as novel food packaging and other food contact materials) and what can be done to mitigate these risks?

Research priority three: regulated products

Food innovation and bringing to market new foods and technological developments have the potential to add variety to our diets and address some of the challenges facing the food production system today. There is a need to understand the safety, and in some cases, efficacy, of these new products or technologies to ensure consumers have access to safe food innovation.

The overarching aim of this research priority is to understand the safety of these regulated food and feed products and emerging food innovations for the UK consumer.

Our ARI for this priority:

- what post marketing monitoring methods can be used to identify, quantify and investigate emerging food safety issues in the UK population from foods introduced into our food supply?
- how can we assess the health risks, if any, associated with long-term exposure to ingredients, particularly novel foods, including exposure to multiple different food ingredients?
- alongside assessment of safety, how can we reliably and consistently assess the health and/or sustainability impacts associated with food products and processes particularly making explicit claims?

Research priority four: regulating the changing food system

The 21st Century food system is characterised by its complexity and innovation. The emergence of COVID-19 and the subsequent pandemic put immense strain on the global food system and tested its resilience. It highlighted that, in this interconnected and fast-moving world, we need access to the best data, intelligence and horizon scanning to understand changes in the system, the impact of these, and how they create vulnerabilities.?

As a modern and accountable regulator the we must innovate and anticipate the impact of changes as well as make the most of new opportunities to regulate more effectively and efficiently. This includes adopting technological advances, digital tools and data analytics. It is also about using social research to gain a greater insight into the behaviour of consumers and the food businesses that supply them, to help ensure effective implementation.

Global events, new consumer trends, changing business practices, and food innovation can all create new risks and opportunities. In this area, we need research and evidence to understand the potential for disruption in our food system and the impact of change. We need to be able to identify new and emerging food technologies and be prepared for the opportunities and challenges arising from these novel foods and processes.

The overarching aim of this research priority is to ensure the FSA can remain at the cutting-edge when developing and implementing food regulations, can respond to emerging challenges and opportunities in a timely and effective manner, and can keep abreast of and respond to how these impact on consumers' interest in safe, healthy and sustainable food.

Our ARI for this priority:

- what analytical frameworks and approaches (for example, behavioural science) help the FSA predict risky food businesses and inform risk profiling so that we and others (for example Local Authorities) can focus our limited resources on the issues that are highest risk and where interventions can be most effective?
- what proxy data is available alongside routine sampling to spot risks for and impact on safety, authenticity, and other standards of UK food for import control?
- what new detection methods and analytical approaches can be used to spot food fraud and non-adherence to regulation more rapidly?
- what opportunities and threats to a safe and trustworthy food system are emerging, for example new technologies, social change, new legislation, or changes to the labour market, and what sources of intelligence, scientific methods and foresight can help FSA anticipate them?
- what interventions can a food regulator make across the food system to encourage healthier and/or more sustainable food?