# FSA 22-06-05 - Annual Science Update From FSA’s Chief Scientific Adviser

This paper is an annual report from the FSA's Chief Scientific Adviser (CSA) giving an overview of the role of the FSA CSA, science within the FSA, and the review of the Scientific Advisory Committees (SACs).

Report by Professor Robin May, FSA Chief Scientific Adviser (CSA).

## 1. Introduction

1.1 This is my second annual report to the Board as the Food Standard Agency’s Chief Scientific Adviser (CSA), and I welcome the opportunity to reflect on the last 12 months in the role.

1.2 With the easing of COVID-19 restrictions, it has been a particular pleasure over the last year to at last have been able to meet with colleagues face to face and to undertake a number of in-person visits, and I would like to take this opportunity to record my heartfelt thanks to all of those who have taken time out of busy diaries to accommodate these visits.

## 2. Role of the FSA CSA

2.1 Broadly speaking, my role as the FSA CSA is threefold:
a) to provide high level assurance about science within the FSA, offering independent challenge and advice to the Board, Executive and the organisation more widely.
b) to maintain strong links with CSAs in other government departments as well as key external stakeholders, representing FSA’s interests in the wider (inter)national landscape and ensuring that the organisation benefits from the most up to date scientific findings from other fields.
c) to act as an ambassador and communicator of science both within the FSA and across government, industry and consumer groups.

## 3. Science Within the FSA

3.1 It has been a busy twelve months for science within the FSA, with a number of major strands of activity coming to fruition.

3.2 This year saw the publication of our public list of Cannabidiol (CBD) products that are currently under consideration through the Regulated Products pipeline, and I would like to acknowledge the huge efforts of both our science and policy teams in handling the enormous volume of applications that were submitted. Going forwards, both I and other science colleagues continue to liaise closely with other government departments, in particular the Department of Health and Social Care (DHSC) and the Home Office, to monitor this market as it moves towards full compliance.

3.3 In my last annual report, I highlighted our successful £19.2m bid to the Shared Outcomes Fund to fund a pilot programme on Pathogen Surveillance in Agriculture, Food and Environment (PATH-SAFE) programme. I am delighted to report that this programme is now well underway. Although we experienced some delays in starting in 2021, due largely to contractual issues, we

have now recruited to all of the senior posts associated with the programme, and work is underway in all four workstreams. More detail is shown in Annex 1, but I am particularly pleased that we have been joined on secondment by two leading academic experts from the pathogen genomics field, Dr Haynes (Fera Capita) and Prof Aanensen (University of Oxford), on this programme. I would also like to acknowledge the invaluable help of the UK Microbiology Society in coordinating wider stakeholder engagement meetings, which have allowed us to rapidly access samples and strain collections that are now undergoing genome sequence analysis.

3.4 The FSA is developing the options for delivering the future model for UK Official Laboratories, recognising the historic decline in UK analytical testing capability. I share the concerns of colleagues both within FSA and across government about the UK official laboratory capacity. Food testing, in particular, is focused on a very small number of (largely commercial) laboratories and there is a shortage of early-career talent within key skills areas (such as toxicology and food microbiology). FSA's focus is to ensure that the UK has a resilient system with the capability it requires to test food and feed. I therefore look forward to seeing proposals for new models of sampling, which will be presented to the FSA Board later this year. Meanwhile, I continue to work closely with CSAs and their teams in other government departments, including Food Standards Scotland and Defra, to coordinate our approach.

3.5 Meanwhile, the FSA has continued to invest in sampling, through delivering retail and imported food surveillance programmes, to identify emerging food safety issues. I am pleased that the FSA has also increased support for local authority targeted enforcement sampling through the local authority pilots. New technologies and expanded data streams offer further opportunities to improve both targeted and routine sampling, and the FSA chaired cross-government sampling group represents a strong opportunity to facilitate the sharing of sampling outcomes and intelligence across government.

3.6 Later this year we will be revising the FSA Areas of Research Interest (ARIs). ARIs have an important function in promoting joint working with other government departments and the wider academic community to address crucial and shared areas of research focus. It is likely that the revised ARIs will emphasise both our continuing commitment to food safety and authenticity, but also FSA's role in helping ensure that food is healthy and sustainable. Once published, I look forward to using the ARIs as a framework to build collaborative working across government and with external stakeholders and will update the Board on those approaches as they take shape.

# 4. Horizon Scanning

4.1 One year on from its establishment, our new horizon scanning function is now up and running. We are making good progress, but there is more that we can do to refine it and use it more effectively in future years. The Board is considering an update paper on this workstream today.

# 5. Social and Behavioural Sciences

5.1 It has been gratifying to see the FSA's recent investment in social science paying dividends. In quick succession, the UK food system has undergone upheaval due to EU Exit, COVID-19 and now conflict in Ukraine and therefore our flexible, responsive capability to track and report consumer data has been invaluable. This is particularly noteworthy in terms of household food insecurity, which the Board is discussing today. Other key contributions to highlight include our public dialogue on genome editing (GE), which has fed into the proposed legislative reform of this area, as well as broader data on online purchasing and novel food technology, gained from the FSA's flagship survey, Food and You 2.

5.2 In addition, our growing reputation for understanding consumer behaviours in the round, aligned with the new FSA strategy, has allowed FSA Science teams to build partnerships with larger players. This is critical, given that policy 'ownership' in this area is distributed across multiple government departments. I have encouraged the team to build capability in behavioural trials, and we are now working closely with other government departments around our shared interest in healthy sustainable diet. A substantial joint funding bid to the HMT Evaluation Fund alongside Defra and DHSC is now under consideration and I very much hope this will be successful, providing a solid foundation to generate quantitative, policy-facing data in this area.

# 6. Review of the FSA's Scientific Advisory Committees

6.1 The FSA's Scientific Advisory Committees (SACs) are non-statutory and advisory non-departmental public bodies (ANDPBs) or Departmental Expert Committees (DECs) which are subject to regular review under the Cabinet Office Public Bodies review programme. The last Review of the FSA's SACs was commissioned in September 2015 and concluded in 2016. Since then, the following were created from the recommendations:

- Joint Expert Groups (JEGs) to support the FSA's SAC's work on regulated products outside the EU:
    - Food Contact Materials
    - Animal Feed and Feed Additives, and
    - Additives, Enzymes and other Regulated Products.
- Science Council.
- Advisory Committee on Social Sciences.

6.2 We are now preparing to initiate the next periodic review to assess the functioning of these bodies since their establishment. The purpose of this Review is to provide assurance to the FSA that the SAC's roles and purposes are appropriate in addressing the future needs of the FSA, consumers and wider government, and that the bodies are operating effectively. The Review will evaluate how the SACs work together and with other relevant bodies and against their objectives and provide recommendations for future ways of working.

# 7. Partnerships

7.1 This year, we have continued to invest in several significant science partnerships. In 2021 we launched Citizen science for food standards challenges, a joint funding call with UKRI to explore applications of citizen science approaches to our areas of research interest. Six projects received funding and are now in field, exploring issues such as levels of antimicrobial resistance bacteria in home grown produce, consumer understanding and perceptions of novel plant breeding methods, and the safe preparation of infant milk. Each project is being supported by FSA leads to ensure impact is maximised for the agency and relevant stakeholders.

7.2 We currently support 10 fellows who are conducting critical FSA research across our ARIs. Through these fellowships, we have expanded our strategic partnerships with universities and funding councils, including UK Research and Innovation (UKRI). These include:

a) a fellowship at the University of Sheffield focussed on analysis and reporting of the FSA flagship Food and You 2 survey

b) a fellowship at the University of Liverpool aligned with the Transforming UK Food Systems (TUKFS) initiative

c) a fellowship at the Quadram Institute focused on foodborne disease and AMR

d) two fellowships working on the cross-government PATH-SAFE programme at the University of Oxford and Capita Fera

e) two fellowships delivering research in using new computation methods in chemical risk assessment of food and research on feed at the Universities of Birmingham and Exeter; and
f) two strategic insights fellowships focused on FSA emerging challenges and opportunities at Queen's University Belfast and the University of Oxford.

7.3 Fellowships represent an excellent opportunity for FSA to build strong links with the research community, benefit from high-level (external) expertise and forge lasting collaborative relationships. However, we sometimes struggle to gain visibility for fellowship opportunities (and therefore have relatively few applications) and do not always gain maximum impact from fellowship projects. Consequently, we have initiated a Coordinated Fellowship Engagement Plan to look at our fellowship strategy, with the aim of enhancing both the attractiveness of, and outputs from, such fellowships.

7.4 Externally commissioned research is vital to the function of the FSA. As highlighted last year, we have found our individual research 'calls' typically receive relatively few bids. This was found to be due in part to the lack of familiarity with the application process amongst potential bidders. To address this challenge, we are developing a set of resources to guide bidders during the application process which include:

a) Including links to our calls on external websites, such as the government 'find a tender' portal.

b) Creating digital guidance on the application process, including a step-by-step tutorial, FAQs, and an acronym dictionary.

7.5 The resources are being developed based on feedback from both internal and external stakeholders, including previous applicants, and should help potential bidders know where and how to apply for our research calls. However, I think there is more that could be done to improve external procurement of research. This is a well-recognised problem across government and active discussions are underway both within FSA and with other departments to identify areas of best practice. In the meantime, proactive engagement with external stakeholders remains our best vehicle to maximise competitive bids to our commissioned calls.

# 8. Ukraine

8.1 Sadly, this year has also seen the need for us to undertake substantial science work as part of the coordinated Government response to the Russia/Ukraine crisis. In particular, our science teams have worked at pace to produce rapid risk assessments for sunflower oil alternatives. We continue to work closely with colleagues across government to monitor food chain vulnerabilities arising from the conflict.

# 9. Science engagement with wider government

9.1 The CSA network has continued to meet weekly over the last year, and, with the easing of COVID-19 restrictions, it was a great pleasure to recently be able to meet as a group in person for the first time since I took up my post as CSA.

9.2 In recent weeks, the major focus of this group has to been in ensuring cross-departmental join-up for science teams working at pace. For FSA, this has been particularly important in the areas of risk assessment for product substitutions. It has also been hugely beneficial to link with colleagues in other departments who are modelling global food system impacts of the conflict as well as considering vulnerabilities, for instance in food fraud.

9.3 Finally, we have engaged closely with the Civil Contingencies Secretariat to ensure that robust plans are in place for intelligence gathering and decision making, should there be any escalation in the crisis.

9.4 Outside of the CSA network, we have also been closely involved in the wider cross-governmental review of the National Security Risk Assessment and the ongoing revision of the Biological Security Strategy, and I would like to express my thanks here to several FSA colleagues who have provided expert input to both reviews.

# 10. Science Communication

10.1 Communicating with, and listening to, our partners, stakeholders and the wider public is a key function of the CSA. As we have emerged from the shadow of COVID-19 over recent months, I have been delighted to at last be able to get 'out and about'. A full list of my visits and formal speaking events is shown in Annex 2, but I would like to express particular thanks here to those colleagues within FSA and partner organisations who facilitated my visit in November to a local abattoir, who allowed me to join a local authority inspection of a food business in London and who spent a day showing me around the Rosalind Franklin COVID-19 testing laboratory. The ability to see this work first hand and to be able to ask questions in situ is invaluable, and I very much look forward to forthcoming visits to other partner institutions.

10.2 One area that has been particularly important in recent months has been in communicating the evidence base around genetically-modified and genome-edited foods. The Government has recently described an intention to reform the regulatory framework around genome-edited animals and plants and therefore we have been engaging closely with the research community, businesses and consumers to ensure that our future approach to regulation in this area is clear and that consumers are able to access independent, clear advice about the underlying technology; for instance, through our 'GE Explainer' video.

10.3 Lastly, I have undertaken a number of communication events associated with the new 'third pillar' within FSA's Strategy, focusing on healthy and sustainable food. I have given several talks (for instance, at the Westminster Food and Nutrition Forum and the Forum for Global Challenges) highlighting the importance of transparent, trustworthy data in underpinning sustainability goals. In January, I participated in a Science Media Centre event on alternative proteins, which was widely reported in the media. I also wrote a blog post and gave media interviews about the challenges and potential benefits of 'eco-labels' on food. This is part of a longer term intention to build strong links not only with consumers and businesses, but also with the research community in this area, in order to ensure that FSA continues to have access to the best international evidence base as we start to play an increasing role in areas such as the environmental impacts of food.

# 11. Future Challenges and Opportunities

11.1 Looking ahead, a major focus for the short-term will continue to be the joint challenges of the ongoing crisis in Ukraine together with the ongoing impact of the COVID-19 pandemic. Both rising food prices and increased insecurity are impacting on UK consumers, particularly those with lower household incomes, and it will be critical that FSA science continues to monitor those changes and, wherever possible, identify potential mitigations.

11.2 Longer-term, the joint pressures of sustainable production and improved human health are driving rapid innovation within the food system, and it is important that our science base keeps pace. I am delighted that FSA will be hosting a workshop in July for industry colleagues working on 'alternative protein' products (insect-based proteins, cultured meat, plant-based proteins, etc) in order to provide guidance on taking these products swiftly through the authorisation process on

their route to market. This is, I hope, the first of what will be a series of such events aimed at expanding our ethos of 'Helping business do the right thing' to our new strategic aim around health and sustainability.

11.3 In March of this year, we launched our FSA five-year strategy, and with it reiterated our main mission: to ensure that food is safe and what it says it is. The strategy also added a new pillar on top of this: food that is healthier and more sustainable. The strategy emphasises the ongoing fundamental role of science and evidence within the organisation. It will be very important, in the face of urgent pressures arising from challenges such as the Ukraine conflict, to ensure that we continue to be able to provide evidence to underpin the long-term policy changes that will be needed to deliver a sustainable, healthy food system. Limited resource is always a challenge in this context and so it will be more important than ever to identify partnerships and collaborations that can help us work with other organisations to deliver both a 'reactive' and 'proactive' science base.

11.4 This has guided thinking on what questions our science will need to answer. I will be working closely with the science team to develop a new set of Areas of Research Interest which reflect these reinforced priorities and a strategic plan for Science and Evidence within the FSA, which sets out an ambitious vision for research over the next three years.

11.5 Lastly, now that the FSA's risk analysis process has 'bedded in', following the UK's departure from the European Union, and within the context of wider consideration of Regulatory Reform, this is a timely moment to consider how to optimise regulatory frameworks to ensure that innovative food products can move swiftly and safely to market. Whilst science is only one part of the regulatory pipeline, it is critical that our risk analysis process continues to exploit the most advanced and robust research, wherever it may be found in the world. Close relationships with our international partners will be key to this and so building both bilateral and multilateral partnerships, as well as having frank conversations with them about what works well, and what does not, will be essential in ensuring that the FSA maintains its position as a global leader in food regulation.

# 12. Conclusion

12.1 As I reach the end of my second year as CSA, I remain deeply impressed with the quality of FSA science and the commitment of the teams who deliver it. The global food system is evolving at an extraordinary pace and there are many challenges – both anticipated and unexpected – that lie ahead. However, I am confident that the first-rate science base we currently have, alongside the new strategic direction that we have recently outlined, will enable the FSA to continue to deliver food that is safe and trusted, as well as improving population health and environmental sustainability.

# Annex 1

## PATH-SAFE

PATH-SAFE is a £19.2 million Shared Outcomes Fund (SOF) research programme which aims to develop a national surveillance network, using the latest DNA-sequencing technology and environmental sampling to improve the detection, and tracking of foodborne human pathogens and antimicrobial resistance (AMR) through the whole agri-food system from farm-to-fork. The heart of this 'virtual' network will be a new data platform that will permit the analysis, storage and sharing of pathogen sequence and source data, collected from multiple locations across the UK by diverse government and public organisations (including FSA, FSS, DHSC, Defra and others across the devolved administrations). This single, user-friendly data system will enable rapid identification and tracking of foodborne pathogens and AMR, improving public health, and

minimising the economic and environmental impact of outbreaks. The programme experienced delays in 2021, but planning begun in earnest in early 2022, with key delivery now underway to complete in March 2024. There are four core workstreams in the programme:

| WS | Activity | Leads | Status/April 2022 |
|---|---|---|---|
| WS1 | Establish a curated, national foodborne disease genomic data platform | FSA/FSS | FSA: Data system procurement underway. Discovery work to begin in May. Likely to focus on 1-2 pathogens (e.g., Salmonella spp.; Listeria monocytogenes).<br><br>FSS pilot underway. FSS will focus on *E.Coli* (generic and STEC) and aims to use WGS to understand source attribution, infection threat, and the level of anti-microbial resistance (AMR) of *E. coli* isolated from a range of different reservoirs in Scotland, including animal hosts, bathing water, wastewater, soil/plants, food and humans. Expected to collect (archive/fresh sample) and sequence several thousand samples over the course of the programme, to be feed into the data system. |
| WS3 | Develop a pilot infrastructure for regular, multi-location sampling | FSA/DEFRA | Defra: Foodborne disease (FBD) pilot underway - consortium led by Cefas. Pilot aims to combine spatially-relevant data on potential pathogen sources with meteorological and public health (FBD outbreak) data to gain a better understanding of pathogen pathways and spread, including seasonal influences on outbreaks, enabling us to identify 'hotspots' and provide advice on the most effective monitoring strategies and targeting of spatial and temporal measures for reduction of FBD risk. It will focus on Norovirus, Salmonella spp. and Listeria monocytogenes.<br><br>FSA: Antimicrobial resistance (AMR) proposals under development. Scoping work to be completed in May. |
| WS3 | Understand the feasibility of using portable diagnostics as inspection tools | FSA/UKHSA | UKHSA: Norovirus in a contained setting pilot discovery planned Summer 2022, delivery Autumn 2022. Pilot will build on WW approaches and develop complimentary diagnostic technology. Settings under consideration include care homes, prisons, food processing plants, airports.<br><br>FSA: Technology readiness level (TRL) tender live in May. Pilot to understand how close new technologies are to deployment in real-life and thus see where further research and development effort needs to be focused. |
| WS4 | Develop a pilot environmental AMR Surveillance system | Defra/ UKHSA<br><br>VMD/ EA | EA/VMD/Defra: River catchments selected; sampling planning and methodology assessment underway. Scoping with University of Worcester for airborne microorganisms is being finalised. Antifungals in biosolids study in final stages. Subject matter experts in place to map out and scope data sets requirements.<br><br>UKHSA: IT platform to enable real-time monitoring across environmental AMR data sources discovery phase is underway. Deloitte will be delivering this phase of work. |
| Programme | Evaluation, fellowships, communications, governance | FSA | Evaluation lead recruitment underway, open tender for supplier live in May. Fellowships in post. Comms strategy developed. Delivery Board, Strategic Board, Science and Data Advisory Groups in place and active. |

# Annex 2

## List of visits and speaking events

### Speaking Events

- 24/06/2021 Government Chemist Conference - LGC Group
- 13/07/2021 STFC Food Network Annual Meeting - Science and Technology Facilities Council/UKRI
- 13/10/2021 Food Safety Incidents and Emergencies Conference - FSA/FSS
- 23/11/2021 Agri-Food Sustainability - Royal Society of Chemistry
- 10/01/2022 Science Media Centre event on Alternative proteins - Science Media Centre
- 25/01/2022 Hosted Prof Marianne Ellis - The Future of Food - Open Innovation
- 10/03/2022 Food Hypersensitivity Symposium - FSA
- 25/04/2022 Institute of Food, Science and Technology (IFST) Spring Conference - IFST
- 26/04/2022 Westminster Food & Nutrition Forum policy conference - Westminster Food & Nutrition Forum
- 04/05/2022 Forum for Global Challenges Conference - Forum for Global Challenges

### Site Visits

- 30/09/2021 Visited the Laboratory of the Government Chemist (LGC) with Defra CSA Gideon Henderson
- 03/11/2021 Farmers Fresh Abattoir
- 23/11/2021 Camden Local Authority Visit
- 24/11/2021 Rosalind Franklin Lab
- 07/12/2021 Minton, Treharne and Davies Lab - Cardiff
- 16/03/2022 FERA Science - York
- 13/05/2022 Future Food Beacon - University of Nottingham Sutton Bonington Campus
- 07/06/2022 Quadram Institute