

ANNUAL SCIENCE UPDATE FROM FSA'S CHIEF SCIENTIFIC ADVISER

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

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1. Introduction

- 1.1 This is my first annual report to the Board as the Food Standard Agency's Chief Scientific Adviser (CSA) and I welcome the opportunity to reflect on my first 12 months in the role and to look forward to opportunities and challenges that are on the horizon.
- 1.2 I would first like to set on record my thanks to colleagues across the organisation for the exceptionally warm and supportive welcome I have received. Having spent the entire period to date working remotely, I very much look forward to the opportunity to eventually get to know colleagues in person in the not too distant future.
- 1.3 I would also like to express my gratitude to my predecessor, Professor Guy Poppy, for creating much of the superb science and evidence 'infrastructure' that I have been fortunate enough to inherit, as well as for his ongoing support and guidance over recent months.

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 Science and evidence lie at the heart of FSA's mission, and throughout this first year in the role, I have been delighted to discover the depth, breadth and quality of the science within FSA and to see how firmly it is embedded within all

of the decision making throughout the organisation. Our evidence-led approach is recognised worldwide and underpins excellent relationships with international partners; an essential strength, given the global nature of the food system.

3.2 I would like to highlight in particular a number of major science ‘milestones’ from the last year. These include:

- a) Our ‘Food and You 2’ survey¹, which pioneered a ‘push to web’ approach, our COVID-19 consumer tracker^{2,3} and our multi method study Food in a Pandemic⁴ which have provided unprecedented insights into consumer behaviours during the COVID-19 pandemic.
- b) Our multidisciplinary work on COVID-19, including behavioural studies, microbiological sampling, and detailed risk analysis.
- c) Our ongoing programme of work on food hypersensitivity, which extends from understanding consumer behaviours, through food labelling approaches to detailed ‘horizon scanning’ to identify potential allergy risks from products that may not even exist yet.
- d) Our use of data and digital innovations to help guide 21st century approaches to regulation within food businesses and around import and export chains.
- e) Our international engagement with other regulators through the International Food Regulatory Analysis conference and via individual discussions with major international regulators such as the US Food and Drug Administration.
- f) Our creation of ‘user-friendly’ science communication pieces such as the Gene Editing (GE) ‘FSA Explains’⁵ leaflet and the FSA Risk Communication Toolkit⁶.
- g) Our new horizon scanning function which is already feeding into strategy discussions and decisions.

3.3 The 1 January 2021 marked the end of the transition period and, consequently, full implementation of the FSA’s new risk analysis process. Within the first four months of the year, over 1100 enquiries had been lodged through the system, with just under half of these being applications for Novel Food authorisation. Despite this remarkable level of demand, it is a testament both to the strength of science within FSA and to the dedicated work of our Scientific Advisory

¹ <https://www.food.gov.uk/news-alerts/news/first-report-from-new-food-and-you-2-survey-published>

² <https://www.food.gov.uk/sites/default/files/media/document/covid-19-wave-1-4-report-final-mc.pdf>

³ https://www.food.gov.uk/sites/default/files/media/document/covid-19-consumer-tracker-report-waves-5-6-7-and-8_0.pdf

⁴ <https://www.food.gov.uk/research/research-projects/food-in-a-pandemic>

⁵ <https://www.food.gov.uk/safety-hygiene/genome-editing>

⁶ <https://www.food.gov.uk/research/research-projects/the-fsa-risk-communication-toolkit>

Committees (SACs) and Joint Expert Groups (JEGs) that a robust process is already well established. The FSA are currently increasing the scientific resource in the relevant areas (e.g. via the recent SAC and JEG recruitment campaigns) to meet the higher demands of an independent UK process. A key challenge will be ensuring that the range of independent expertise available to the FSA remains well matched to the rapidly changing food system landscape. Consequently, I recommend that:

- a) **The FSA keeps membership of SACs and JEGs under regular review, using ‘horizon scanning’ activities elsewhere in the organisation to help guide future recruitment rounds in order to ensure ongoing capability to deal with the pace of technology change and adoption within the food sector.**
- b) **We engage closely with the Government Office for Science to ensure maximum ‘visibility’ of SACs across government, enabling FSA to both access specific expertise that may be available in other departmental SACs and to ensure that, where relevant, our own SACs/JEGs contribute fully to ongoing policy issues in other departments.**

3.4 A critical component of FSA’s evidence base is the ability to commission external expert-led research in key strategic areas. This is done both through the major programmes within FSA (e.g. food hypersensitivity) and through the Strategic Evidence Fund (SEF), which enables rapid, flexible funding of projects in areas of strategic need – something that is rare amongst other government departments but essential to the FSA’s ambition to be a modern, evidence-led regulator. The FSA’s Areas of Research Interest (ARIs)⁷, published last July, provide an overview of our research priorities.

3.5 We have worked closely with UK Research and Innovation (UKRI) and the Transforming UK Food Systems (TUKFS) initiative to support a number of research fellows who are pursuing critical areas of research for FSA. We have also expanded our strategic partnership with universities across the country. These include:

- a) A fellowship in the area of foodborne disease and genomics, based at the Quadram Institute.
- b) Fellowships with the universities of Birmingham and Surrey in the areas of toxicology and genomics, respectively.
- c) A fellowship aligned with TUKFS, looking at future foods and urban farming in particular.

⁷ <https://www.food.gov.uk/about-us/areas-of-research-interest>

- d) A fellowship with University of Exeter in the area of health economics to estimate the economic burden of contaminants in food.
- e) A fellowship with University of Bath on behavioural economics.
- f) Sponsorship of a PhD student at the University of Cambridge, investigating the regulatory impact of emerging technologies in the food sector.
- g) A long standing co-funded fellowship with the Centre for Analysis of Risk and Regulation at the London School of Economics, promoting research on risk, regulation, and compliance drivers.
- h) Food and You 2 Fellowship with the University of Sheffield to facilitate skills sharing and faster, better reporting on our flagship Official Statistics.

3.6 Such fellowships are not only an excellent way of delivering high quality research but also help build national capacity and maximise the visibility of FSA-sponsored science internationally.

3.7 Externally commissioned research is vital to the function of FSA. However, our individual research 'calls' typically receive relatively few bids. This is probably due to a combination of reduced 'visibility' to the external research community (relative to major funders such as UKRI) and the lack of familiarity with the application process amongst potential bidders. To this end, over recent months I have started working closely with colleagues across the organisation to increase both the visibility and accessibility of the scheme. I recommend that in the coming months the FSA:

- a) Creates a 'user-friendly' digital platform to increase the visibility of our research calls.**
- b) Provides a 'one-stop-shop' contact point to provide potential applicants with advice on how to complete an application.**
- c) Actively engages with the external research community (both via web/social media platforms and through organisations such as the learned societies) in order to raise FSA's profile as a potential research partner.**

4. Science Engagement with Wider Government

4.1 All government CSAs meet weekly in a group convened by Government Chief Scientific Adviser, Sir Patrick Vallance. In addition, I hold regular individual meetings with CSAs in other government departments with overlapping interests such as Department for Environment Food and Rural Affairs (Defra) and Department for Health and Social Care (DHSC). These meetings provide

an invaluable opportunity to discuss topics of interest to FSA and to develop joint activities in areas of overlapping policy.

- 4.2 As the Board will appreciate, over the last year much of this cross-governmental CSA activity has focused on the response to the COVID-19 pandemic. The FSA has contributed directly to much of this response and continues to play a major role in several areas, specifically:
- a) I represent FSA on the National Core Study group (led by Professor Andrew Curran, CSA at Health and Safety Executive) investigating SARS-CoV-2 transmission in the wider environment. This large programme of work has several aspects of relevance to FSA, in particular in assessing viral burden and transmission risk in food manufacturing, distribution and retail settings.
 - b) We are integrally involved in the work being led by Defra on detecting SARS-CoV-2 in wastewater streams. In particular, FSA colleagues have played an invaluable role in identifying appropriate 'test sites' within the food system, facilitating rapid roll-out of this research programme. Early indications are that this approach represents an extremely sensitive and rapid method for early detection of the virus; something that will be critically important as lockdown measures are lifted. In addition, the technology development and feasibility testing that has taken place via this pilot study form a large component of the cross-departmental genomic surveillance initiative, described in point 16 below.
- 4.3 Collaboration is central to successful science and consequently it is critical that FSA science is embedded across England, Wales and Northern Ireland as well as engaging closely with science programmes at Food Standards Scotland (FSS). I am pleased to see the close working relationships between the FSA and academic institutions in the three nations. I meet regularly with the FSS Chief Scientist, Prof David Gally, and a 'Four Nation' approach is firmly embedded within FSA-led scientific initiatives such as the Shared Outcomes Fund (point 16 below). However, it is unfortunate that the restrictions imposed by the COVID-19 pandemic have precluded 'in-person' interactions with colleagues across the Devolved Administrations over the last twelve months and consequently **a key priority for me next year will be to strengthen links between the CSA office and science colleagues across all the nations of the UK.**

5. Future Challenges and Opportunities

- 5.1 This is a unique moment for the role of science within the food system. The COVID-19 crisis has shone a spotlight on issues ranging from household food security to international transport chains. There is an unprecedented level of awareness of the impact of obesity and unhealthy diets – not least in terms of COVID-19 susceptibility. At the same time, there is a rapidly growing focus on the impact food production has on the environment and climate.

5.2 None of these issues can be tackled in isolation. Consequently, over recent months I have been engaging closely with other CSAs, wider government and colleagues leading the National Food Strategy in order to ensure that FSA is closely engaged in shaping the future of the UK, and indeed international, food system. Specifically:

- a) We are in active discussions with colleagues in DHSC, Defra and the National Food Strategy to propose a cross-departmental review of food labelling in the near future. The ultimate aim of such a review would be to enable consumers to make well-informed choices that improve human health whilst minimising negative impacts on the environment.
- b) Our Science Council has initiated a broad 'horizon scanning' project that explores the potential impact of achieving Net Zero Carbon within the food system, highlighting indirect and in some cases unforeseen implications of these changes in food production or processing that may have direct relevance for FSA.
- c) We have been actively engaged with the Defra-led public consultation on GE, ensuring that the regulatory framework that would apply to GE foods is clear and highlighting areas of rapid technology development in this sector. More broadly, we have undertaken both open 'workshop' meetings and conversations with key stakeholders to consider the implications of rapidly evolving areas of the food system, such as the production of 'alternative' proteins or lab-cultured meat.
- d) Our data team is recognised across government for its innovation and multidisciplinary approach. Two examples would be our ongoing collaboration with HM Revenue & Customs and Cabinet Office on data management protocols that enable improved information sharing between organisations operating at the border, as well as our work with the University of Lincoln on establishing 'Data Trusts'.

5.3 At the start of the year, FSA coordinated and led a large, cross-departmental bid to Treasury, via the Shared Outcomes Fund, aimed at creating a world-leading infrastructure for genomic surveillance of foodborne pathogens. If funded, this project will enable us to work with partners in Food Standards Scotland, Defra, DHSC and UKRI to use modern whole-genome sequencing technology to map both 'wildtype' and antimicrobial-resistant foodborne pathogens from farm to fork. Such a resource has the potential for significant impact in linking cases of foodborne disease to potential sources and in understanding pathogen transmission chains within the food system. I hope to be able to update the Board on the development of this concept in the extremely near future.

5.4 As we look ahead to the coming months and our hopeful 'emergence' from the shadow of COVID-19, a key challenge for FSA will be to shape our evidence-gathering activities in light of global changes. One example is our monitoring of

foodborne disease (FBD). Data from the last 12 months indicates a substantial drop in foodborne disease rates for all the major pathogen classes, but this is very likely to be an artefact due to very limited attendance of patients at GP surgeries and/or significantly reduced diagnostic testing during the pandemic. Understanding the true level of FBD in 2020 and early 2021 will thus require detailed analysis of 'proxies' (such as self-reported illness on social media); work that is already underway within the organisation. An accurate benchmark will be invaluable as we start to monitor 'post-COVID' trends and establish, for instance, whether changes in domestic and commercial hygiene practices may ultimately lead to a lasting change in FBD rates. **A recommendation for the coming months is therefore that FSA ensures robust data gathering from local authorities, healthcare services and others to identify any potential trends in FBD incidence as the UK recovers from the COVID-19 pandemic.**

- 5.5 There are also outstanding questions as to whether the COVID-19 pandemic will have a lasting impact on the way we purchase and consume food. Over the last year, most of us have done far more home cooking and less eating out than ever before. And, whilst the hospitality sector has endured its most challenging year ever, many small food producers and retailers such as farm shops and local food delivery companies have flourished. Within FSA we have been monitoring these changes closely and will continue to do so in order to ensure we have access to robust scientific evidence from these sectors in order to ensure the food they provide is safe and what it says it is.
- 5.6 The last year has also brought to the fore the issue of food insecurity. At the height of the pandemic, our Consumer Tracker data showed over 30% of people expressing concerns about food availability, 28% having concerns about food affordability and an alarming 9% having obtained food from a food bank or charity in the previous month. Close monitoring of these trends as we emerge from the pandemic will be critical in guiding FSA activities to ensure we continue to protect some of the most vulnerable members of society. **I therefore recommend that the FSA retains this Consumer Tracker function for the foreseeable future, together with regular reviews to ensure the data obtained are representative of the UK population as a whole, including those in 'hard to reach' groups.**
- 5.7 Lastly, a fundamental element in ensuring food standards is access to state-of-the-art laboratory capacity. The UK's exit from the European Union, together with a rapidly changing commercial landscape in this area, presents both challenges and opportunities for the future. It will be important for the FSA to **continue to work closely with other government departments, including the newly-formed UK Health Security Agency, to ensure that we maintain national lab capacity and continue to have access to cutting-edge technology** in order to ensure both the safety and authenticity of food well into the future.

6. Science Communication

6.1 The FSA is well recognised (91% of those asked) and highly trusted (75%) by the public, and rightly so⁸. Our focus on putting science and the heart of what we do, together with our unflinching dedication to transparency, means that consumers can have complete confidence not only in our advice but also in the scientific process that underpins it. Indeed 88% of those asked are confident that we communicate food-related risks openly and honestly – clear evidence that our transparent approach is the right one. Communicating FSA science to the public is a key part of the CSA’s role and there have been a number of opportunities to do so over the last year:

- a) In November 2020, Michelle Patel, FSA Head of Social Science and I delivered talks on the ‘Future of Food’ at New Scientist Live, highlighting our recent findings in food behaviours and discussing some of the innovative products that are likely to enter the food market over the next decade.
- b) In March 2021, Rick Mumford, FSA Head of Science, Evidence and Research, Rebecca Sudworth, FSA Director of Policy and I conducted a media briefing with journalists via the Science Media Centre, discussing our new Risk Analysis process following the end of the EU Transition period.
- c) In April 2021, we carried out an extensive set of radio and television interviews to try and improve consumer understanding of ‘use-by’ and ‘best before’ dates.
- d) Lastly, the Board will be aware of the recent government consultation, led by Defra, regarding the use of GE (genome editing) in agriculture. As part of this wider government review, we have carried out stakeholder engagement events and issued an ‘FSA Explains’ video to ensure that the public understands both the science behind GE and the way that GE products are currently regulated.

7. Conclusion

7.1 I would like to end this annual report as I started it, by putting on record my strong confidence in the scientific process that lies at the heart of FSA’s mission. This is a turbulent time for the UK food system, as it deals with both the lasting legacy of the COVID-19 pandemic and the challenge of providing healthy diets in a sustainable and ethical way. However, I remain firmly convinced that a first-rate science base will enable FSA to continue to deliver food that is safe, and what it says it is, throughout the changes that lie ahead.

⁸ <https://www.food.gov.uk/news-alerts/news/first-report-from-new-food-and-you-2-survey-published>