**PATHSAFE data system for the rapid interrogation and archiving of genomic data**

**Pre-engagement Advert**

**Background**

The Pathogen Surveillance in Agriculture, Food and Environment ([PATH-SAFE](https://www.food.gov.uk/news-alerts/news/ps192-million-for-cross-government-surveillance-project-to-protect-public-health)) programme is a £19.2m Shared Outcomes Fund (SOF) research programme. It 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 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 (incl. 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.

By creating a fully integrated surveillance system, we have the potential to not only collect and ‘mine’ this data in different ways, but also create efficiencies by additionally testing samples collected for one purpose for foodborne pathogens and by having data that can be readily shared between different partners.  Through this pilot project, we will establish a **One Health Approach** (taking a systems-based view, integrating human, animal, and environmental health), with the establishment of shared technology platforms and common data standards. This approach will directly contribute to the government’s 20-year vision and the AMR National Action Plan[[1]](#footnote-2), which has made a major, pan-government commitment to countering the risks associated with AMR.  The government has highlighted that the development of new diagnostics and improved access to and use of surveillance data are key levers to tackle this rapid rise and the associated costs of drug-resistant infections through agriculture, food, and the environment.

The PATHSAFE programme has 4 core workstreams (WS) as detailed below.  This pre-engagement advert relates to **Workstream 1**.

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| **WS** | **Title** | **Description** |
| 1 | Establish a curated, national foodborne disease genomic data platform | To create a ‘user-friendly’ platform for the rapid interrogation and archiving of genomic data. |
| 2 | Develop a pilot infrastructure for regular, multi-location sampling. | Pilot infrastructure to provide WGS data from regular, multi-location sampling of wastewater and food products. |
| 3 | Understand the feasibility of using portable diagnostics as inspection tools. | The programme will investigate the technology readiness levels (TRL) of new portable diagnostics.  The results of these studies will inform options for in-field testing and/or development. |
| 4 | Develop a pilot environmental AMR Surveillance system | To understand the nature and extent of AMR in the environment, the drivers that influence this, and the development of a One Health platform focussed on environmental data that will enable a scaled-up surveillance programme to be undertaken. |

**Open tender overview**

Tenders will be invited to carry out a pilot project to design and develop a user-friendly platform for the rapid interrogation and archiving of genomic data from human pathogens commonly associated with food.  This pilot will build on ‘dashboard’ approaches to create powerful, but easily understood, interfaces that can be used by decision makers, understanding that different layers of accessibility may need to be developed due to data sensitivities.   A key element of the data system development will be allowing the seamless integration of sample data with other existing data sources to create new knowledge.

WS1 will be formed of 2 key activities:

1. Discovery activity (April-September 2022) (not part of open tender): Will investigate the preferred pathogens of focus (1-2 pathogens), define the current pathogen data landscape for named pathogen(s) and identify user need.
2. Delivery of the data system (September 2022-March 2024) (open tender): The outputs of the Discovery activity will be provided to the successful supplier for this tender upon completion in September 2022. The proposed work will comprise the design, development, prototyping, initial population and deployment of a genomic data system.

Bids will be expected to detail things like:

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| Data architecture, standards, importation and collation. | Partnerships and collaborations with leading sources of expertise and data. |
| System hosting and future proofing. | Project management plans. |
| Data sensitivities, sharing and protection. | Expertise in the development of Genomic Pathogen based surveillance. |
| Risk management. | Training plans. |

Expected key outputs:

* A user-friendly (accessible, open, range of end users) genomic Data System which can accept, analyse and visualise pathogen genomic data.
* Interrogation and analysis of this data to address research questions.
* A full technical report addressing the relevant areas of the study which is suitable for publication on the FSA website.

**Funding available:**

The programme has the below funding available in FY22/23 and FY23/24. Funds **must** be spent within the allocated financial year and cannot be reprofiled.

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| **Financial Year** | **Available funding** |
| 2022/2023 | £700,000 |
| 2023/2024 | £1,600,000 |

**Timelines:**

* Questions are welcome from interested parties until **16.30 25th March**. Responses will be posted online by early April, in advance of the open tender. Individual discussions will not be possible at this time.
* It is expected that the open tender for this work will go live in April 2022 to close in May 2022.
* Work is expected to begin as soon as possible, but by September 2022 at the latest.

1. [Tackling antimicrobial resistance 2019-2024](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/784894/UK_AMR_5_year_national_action_plan.pdf) [↑](#footnote-ref-2)