



Defence and Security  
Accelerator

# Future-Proofing Biosecurity by Strengthening the UK's Microbial Forensic Capability

Briefing and Q&A Session

9 January 2025



# Innovation for a Safer Future

# Agenda

Time	Item	Presenter
14:00 – 14:05	Welcome, Housekeeping, Introduction	<b>Alison Stevenson</b> DASA Delivery Manager
14:05 – 14:15	Introduction to DASA	<b>Clare Green</b> DASA Innovation Partner
14:15 – 14:25	Introduction to the competition	<b>Stuart Mills</b> MOD Head Global Issues Security Policy and Operations
14:25 – 14:40	<b>Future-Proofing Biosecurity by Strengthening the UK's Microbial Forensic Capability</b> Competition Background and Details	<b>Simon Weller</b> Dstl Project Technical Authority
14:40 – 15:20	Question & Answer Session	Competition Team
15:20 – 15.25	Wrap Up	<b>Alison Stevenson</b> DASA Delivery Manager

# Housekeeping

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- Welcome to today's Briefing and Q&A for the new DASA competition: **Future-Proofing Biosecurity by Strengthening the UK's Microbial Forensic Capability**
- Please note your camera and microphone will be kept off.
- The slides and the anonymised questions and answers will be uploaded afterwards to the DASA gov.uk website.
- Discussions will remain at **OFFICIAL**.
- Q&A session will take place after via Slido. To access, go to the website [www.sli.do](http://www.sli.do) (on a separate tab or device) and enter the code **#MFC**.

# Submitting Questions

Please submit or upvote any questions via slido



Scan above, or go to the website [sli.do](https://sli.do) and enter the code #MFC





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# Clare Green

Innovation Partner –  
Yorkshire and the Humber

## DASA Overview



# Our Mission

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The Defence and Security Accelerator (DASA) finds and funds exploitable innovation to support UK defence and security quickly and effectively, and support UK prosperity.

# Why work with DASA

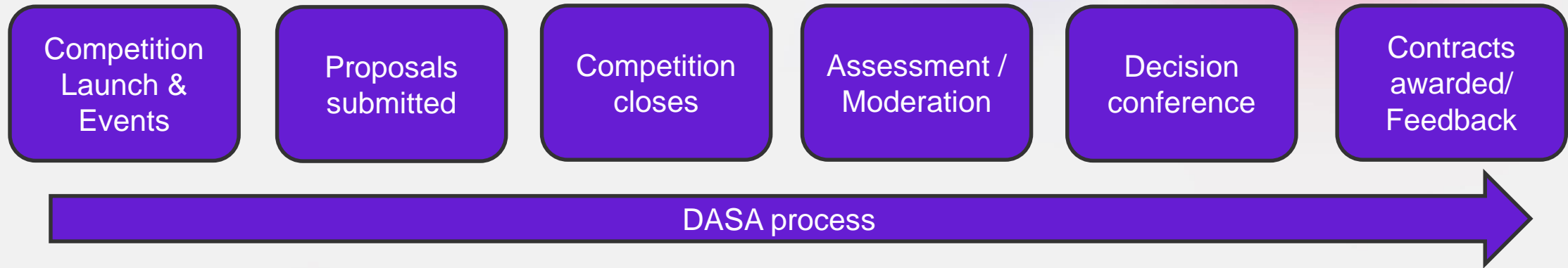
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**DASA is set up to accelerate ideas towards impact and help businesses succeed.**

- Innovation Partners provide advice and guidance
- Intellectual property stays with the innovator
- Quick, simple contracting process
- Project Manager and Technical Partners to support project delivery
- Post-funding support to help pull ideas through to impact
- 100% funding through Open Call and Themed Competitions



# High level process







Defence and Security Accelerator  
Part of [Ministry of Defence](#)

- Login/Register for an account
- Ideas Marketplace
- Apply for Funding
- Market Exploration
- Defence Technology Exploitation Programme (DTEP)
- Defence Innovation Loans
- Innovation Case Studies
- Get in touch with DASA

Featured



18 December 2023 — Case study  
[Flare Bright continues to fly high](#)  
Following initial funding from the Defence And Security Accelerator (DASA) to help get it off the ground,



12 December 2023 — News story  
[£1.5 million competition seeks innovations to remotely monitor sensitive sites](#)  
The Nuclear Decommissioning



5 December 2023 — News story  
[DASA launches new £1.6 million competition to get missiles talking](#)  
DASA has launched a new Themed Competition to identify and develop

We recommend you use a **Google Chrome browser** when accessing the service

Log in, or register for an Enterprise Collaboration Service (ECS) account

All current calls, competition documents and dates, including the 'pipeline'

Contact an Innovation Partner and DASA Help Desk

# DASA Homepage

# Meet the team



Andrew Peaty  
West Midlands

Jas Shanker  
East Midlands

Clare Green  
Yorkshire &  
Humber

Duncan Sime  
North West

Anna Taylor  
North East

Mike Madden  
South West



Mark Helliker  
South East

Ralph Wilkins  
London

Vicki Savage  
East of England

Tom Adamson  
Wales

Deb Carr  
Scotland

International

## Contact us

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[www.gov.uk/DASA](http://www.gov.uk/DASA)



@DASAccelerator



[accelerator@dstl.gov.uk](mailto:accelerator@dstl.gov.uk)



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# Stuart Mills

MOD Head Global Issues  
Security Policy and Operations

## Introduction to the competition





# UKMFC and Future Proofing Biosecurity DASA Competition



Dr Simon Weller

Chemical and Biological Analysis and Attribution Group



Ministry  
of Defence

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# Mission Success for UK Defence and Security

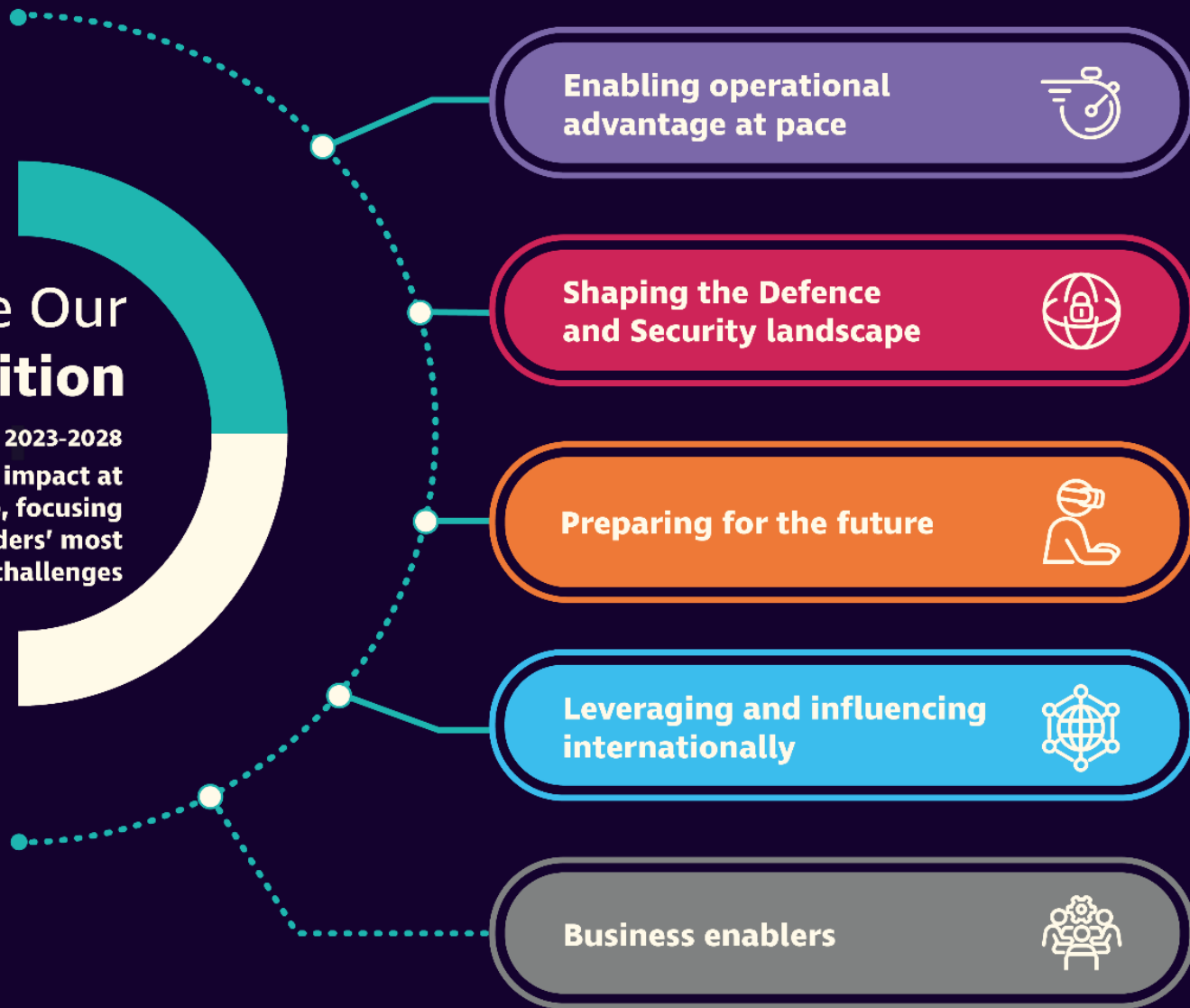
through Science and Technology advantage



# Achieve Our Ambition

2023-2028

Deliver greater impact at increased pace, focusing on our stakeholders' most important challenges



# Deliver through a portfolio of programmes and projects



Advanced Materials	Artificial Intelligence	Autonomy	Chemical Biological and Radiological (CBR) Defence	Communications and Networks	Cyber Security	Defence Science and Technology Futures
Electromagnetic (EM) Activities	Future Kinetic Effects and Weapon Systems	Future Workforce and Training	Future Sensing	Human Performance and Protection	Hypersonic Weapons	Influence and Command
Air Systems	Deterrent and Submarine Systems	Land Systems	Maritime Systems	Security Systems	Space Systems	Specialist Systems
UKStratCom Integration	High Level Decision Support	Platforms and Weapons Threat Evaluation	Support and Sustainability	Support to Operations and Crisis	Crime and Policing Services (*)	S&T Data Exploitation Enabling Programme (DEEP)

Programmes will have an emphasis on **driving**, **responding** or **servicing** science & technology

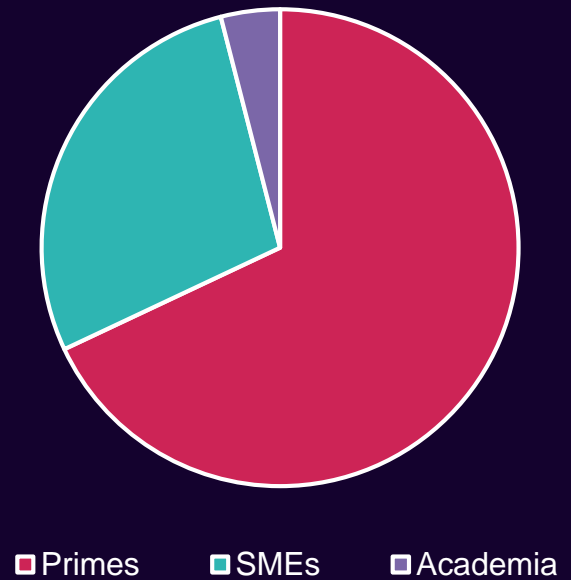
09/01/2025 – Launch Webinar and Q&A – DASA Competition Microbial Forensics Capability



## By working with Dstl, suppliers can:

- Work with world-class scientists and technologists at the cutting edge of innovation
- Benefit from increased funding from Government
- Gain access to state-of-the-art facilities for development and testing
- Retain intellectual property rights, boosting longer-term prosperity
- Test and improve concepts with input from potential users/customers
- Benefit from the experience and expertise of our framework supply partners

Total Supplier funding 2023/24  
£598m



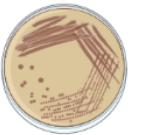
# United Kingdom Microbial Forensics Consortium

## Definitions and Background

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- **Microbial Forensics.** An emerging field of biology
- **Microbial** = intentionally broad term to capture all biological hazards
  - e.g. bacteria, viruses, fungi, toxins..... pests also in scope
- **Forensics** = provides more information than a simple identification:
  1. Is this a natural or nefarious event?
  2. Has this pathogen been engineered?
  3. What other information can we obtain?  
e.g. origin or provenance, identify laboratory manipulation, presence of AMR etc.



## Multiple methods to introduce precise genetic modifications into a range of organisms

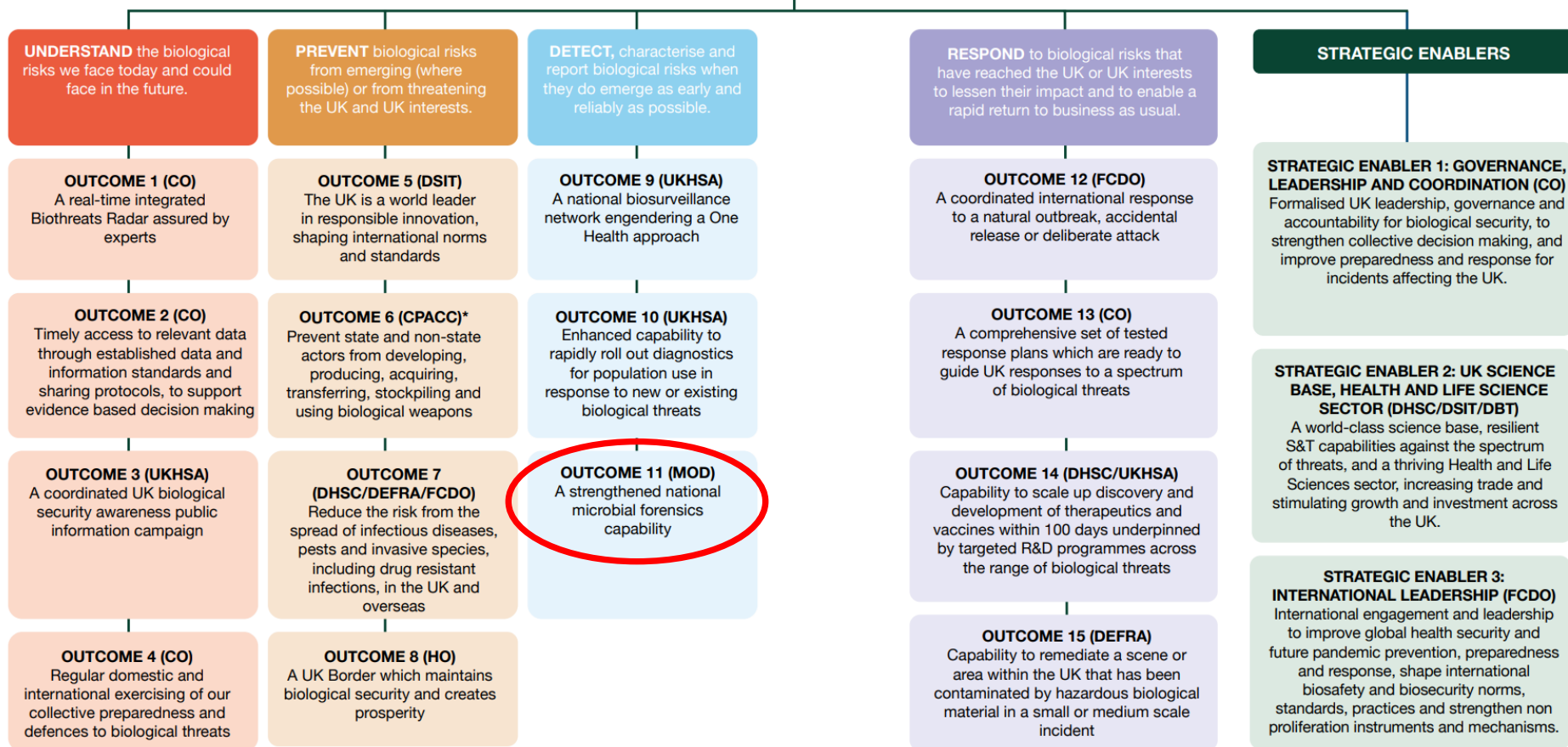
**Table 1.** The types of nucleic acid alterations that may be induced by distinct NGTs in different organisms

Purpose	Intended sequence alteration	Type of NGT	Type of organism <sup>1</sup>	Donor template	Modification	Comments
Sequence correction	Substitution of one or a few bases	Base editing	P, A, F, B	No	Mostly C↔T or A↔G, with some exceptions	Additional base substitutions are possible with specific techniques. Requires a PAM, and usually changes all identical bases (e.g. all C's) in the targeted region
		Site-directed nuclease (SDN)	P, A, F, B	No	All base substitutions possible	Substitution is result of error-prone repair processes, which may generate random sequence variations at the targeted site, including base substitution(s)
		Oligo-nucleotide-directed mutagenesis (+ SDN)	P, A, F, B	Oligo-nucleotide (DNA or DNA/RNA)	One or a few base substitutions, defined by donor template	Oligonucleotide donor may contain one or up to 4 centrally located base mismatches, which maybe converted to the target sequence with low efficiency. Creation of a nearby double-strand break by a SDN may increase the substitution efficiency
		Prime editing	P, A, F	No DNA template, but extended guide	One or a few base substitutions, defined by RNA	Extended guide RNA is reverse transcribed into oligonucleotide DNA template for insertion. Specific substitution of all bases possible, even

European Commission: Joint Research Centre, Broothaerts, W., Jacchia, S., Angers, A., Petrillo, M. et al., New genomic techniques – State-of-the-art review, Publications Office, 2021, <https://data.europa.eu/doi/10.2760/710056>

**VISION:** By 2030, the UK is resilient to a spectrum of biological threats and a world-leader in responsible innovation, making a positive impact on global security, economic and health outcomes.

**OUR MISSION:** To implement a UK-wide approach to biosecurity which strengthens deterrence and resilience, projects global leadership, and exploits opportunities for UK prosperity and S&T advantage.



\* The Counter Proliferation and Arms Control Centre (CPACC) consolidates expertise and policy-making on international counter proliferation and arms control issues; it is made up of the DBT, FCDO and MOD.

- Defence has pre-existing capability to undertake microbial forensics
  - Chemical and Biological Analysis and Attribution Capability (CBAAC) is the UK laboratory for the analysis of suspect samples (Homeland and Overseas)
  - CBAAC ensures that the UK meets Counter-CBRN policy
  - Attribute the material to bring perpetrators to justice



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- Creation of the **UKMFC laboratory network** as a world leading One Health approach to investigating outbreaks, improved UK preparedness in this area is seen as a benchmark
- Development of an agreed set of **cross-sector working practises** enabling the development of a cadre of suitably qualified and experienced personnel in microbial forensics
- Early **detection and attribution** by the UKMFC will serve as a deterrent to the misuse of biological materials





## Tranche 1 Funding Allocation

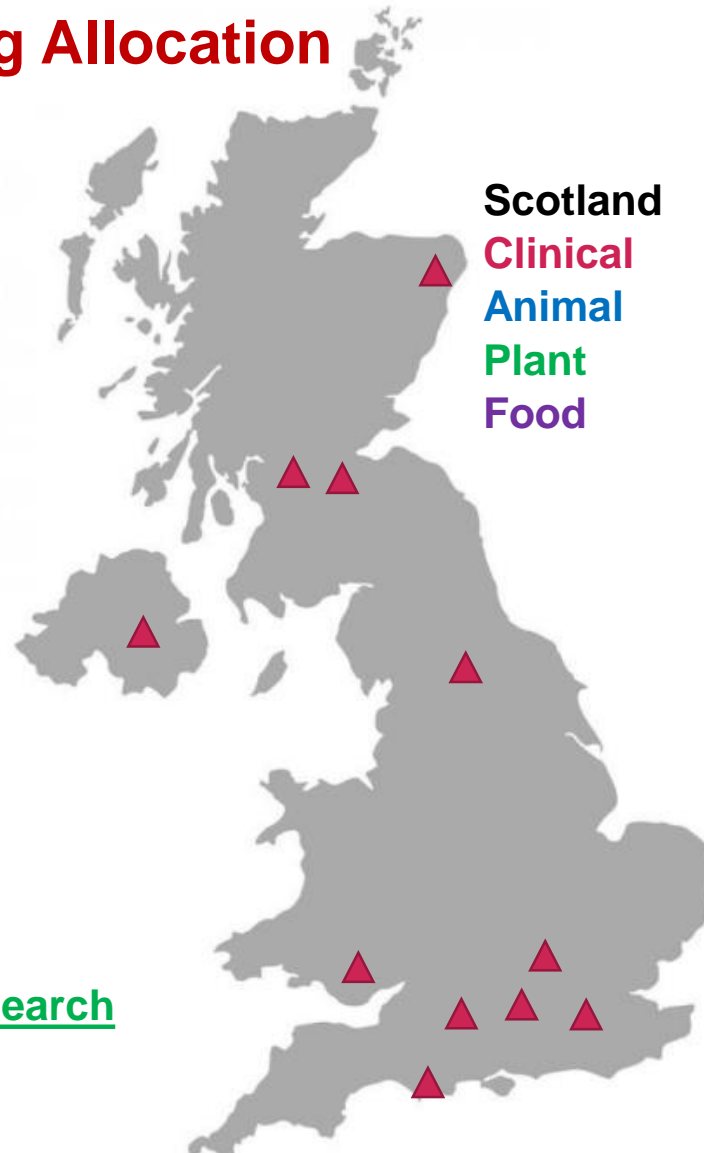
– = on contract  
 \* = expected weeks  
 # = in progress

### Northern Ireland

**Clinical** Dept. of Health  
**Animal** AFBI#, QUB#  
**Plant** AFBI#  
**Food** AFBI#

### Wales

**Clinical** PENGU  
**Animal** APHA, CEFAS  
**Plant** FERA, Forest Research  
**Food** FERA



### Scotland

**Clinical**  
**Animal**  
**Plant**  
**Food**

**PHS**  
SASA, APHA, CEFAS,  
SASA, Forest Research  
FERA

### England

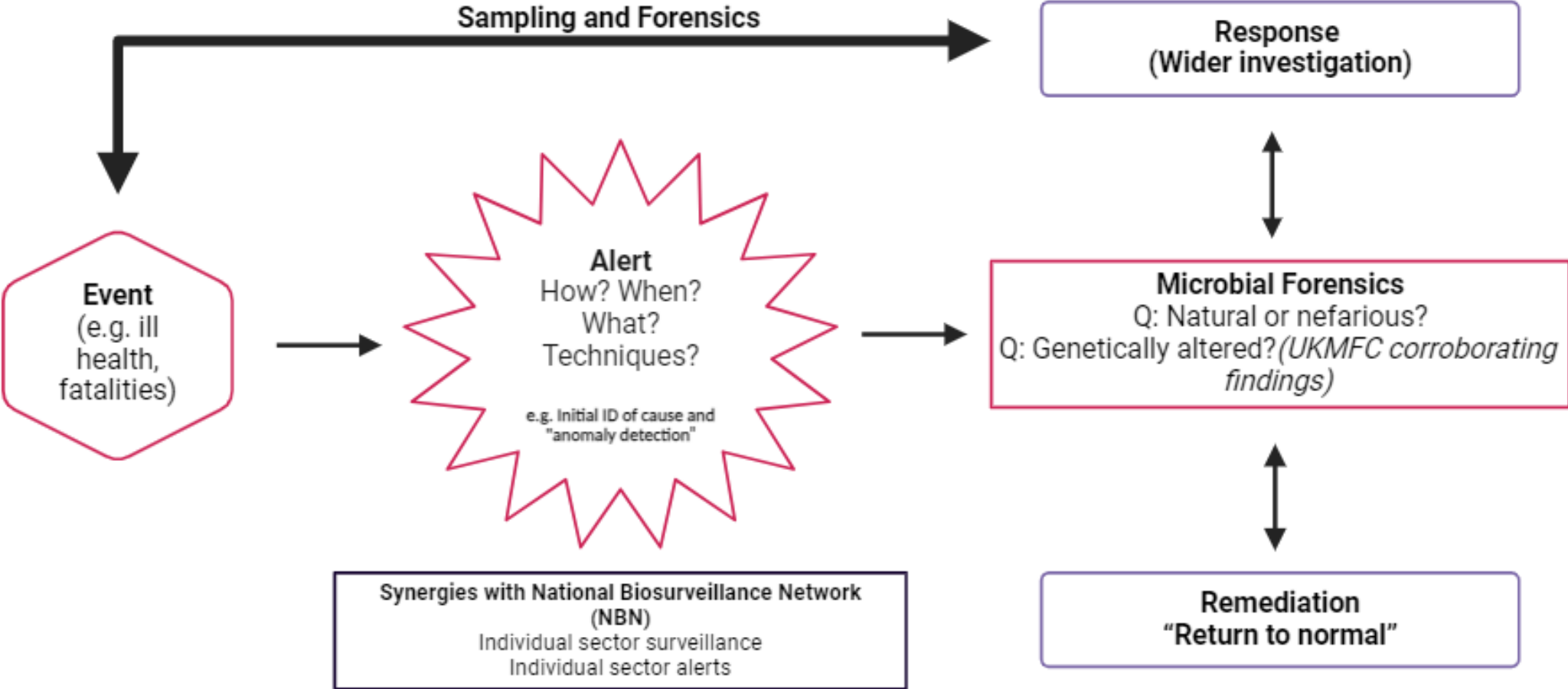
**Clinical**  
**Animal**  
**Plant**  
**Food**

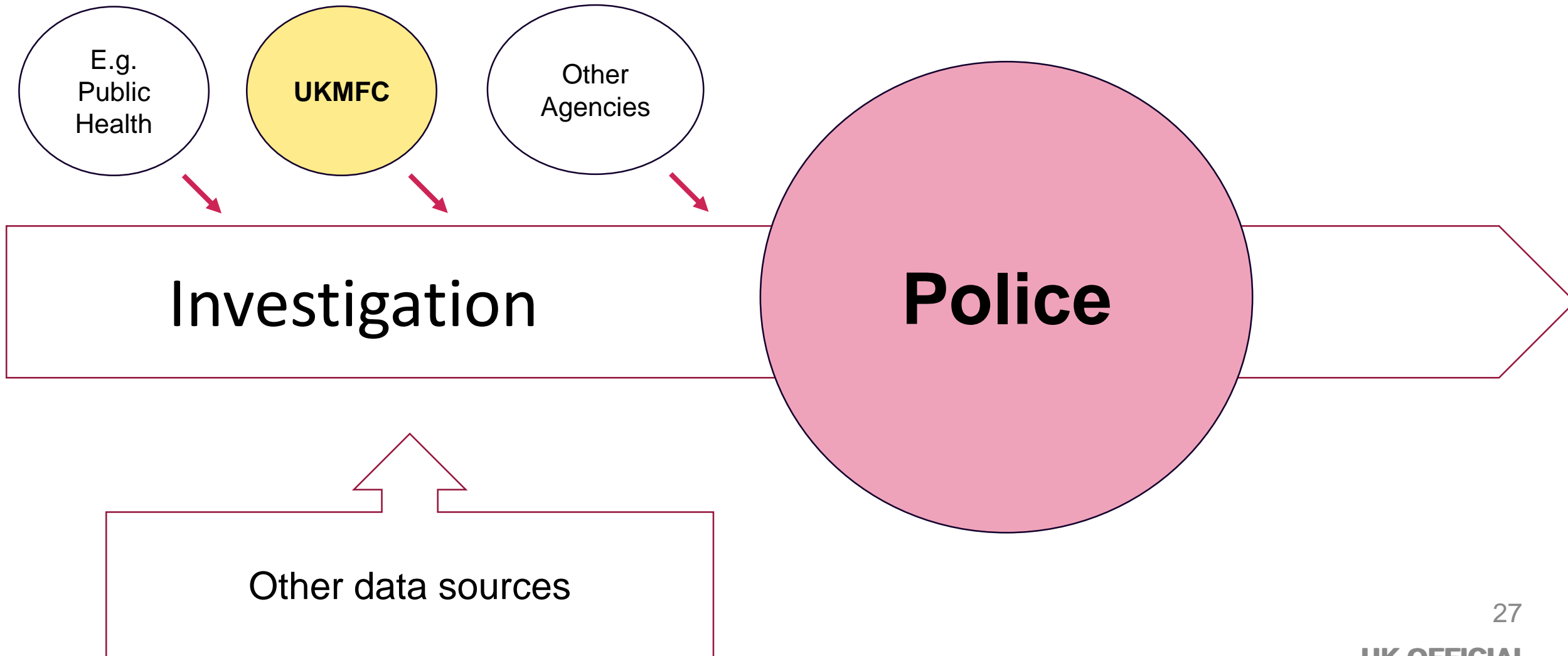
UKHSA  
APHA, CEFAS  
FERA, Forest Research  
FERA



- Genomics and Bioinformatics: generation of genetic information from samples and the use of computational tools to interpret this information.
- A core UK strength – a UKMFC Bioinformatics Working Group formed.
- Now developing bioinformatics pipelines and shared working practises to analyse and interpret genomic data.







**DASA**

INNOVATION  
FOR A  
SAFER  
FUTURE

# Future-proofing Biosecurity by Strengthening the UK's Microbial Forensic Capability

**Themed Competition**



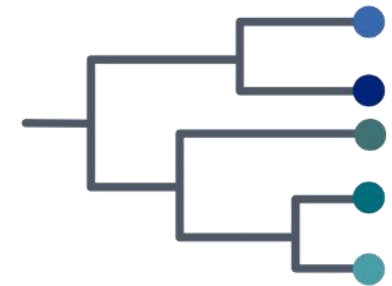
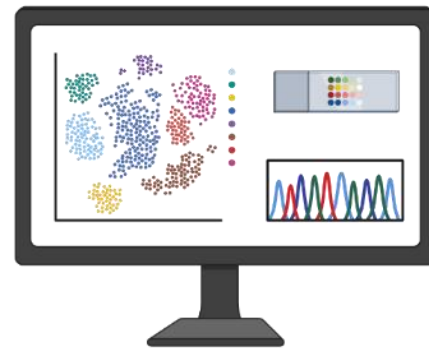
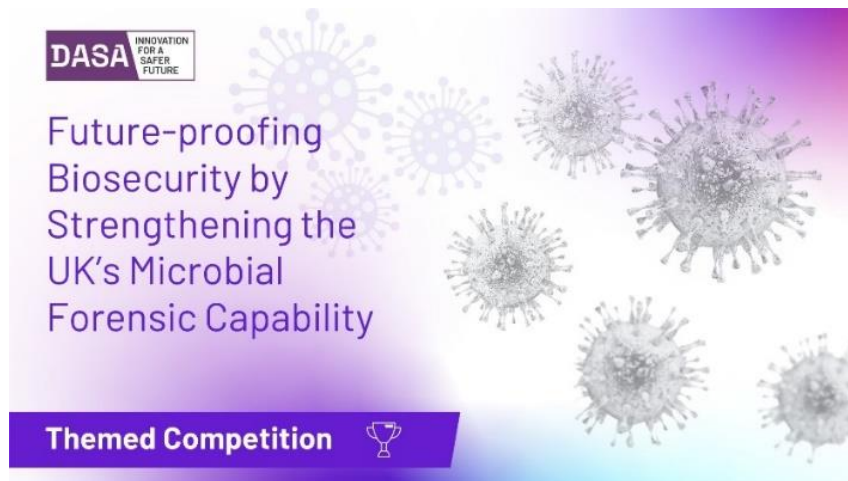
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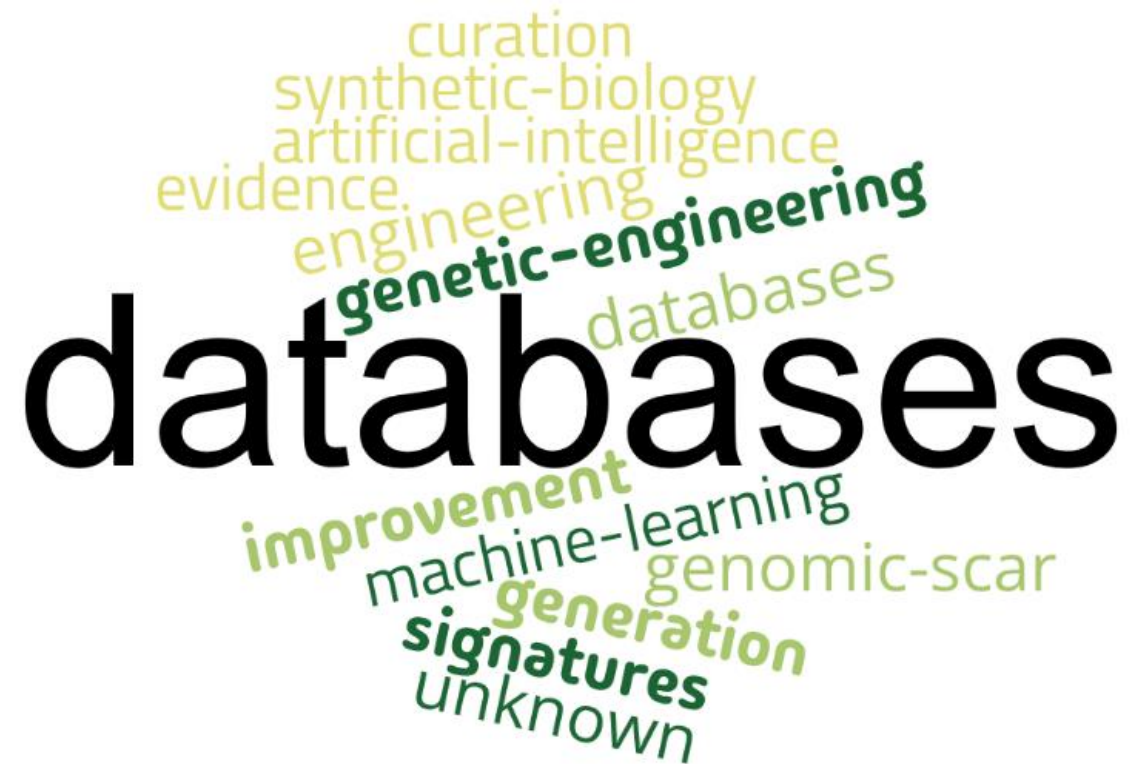
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- To provide *next generation* capabilities to strengthen the UKMFC
- Innovations must start at a minimum of TRL 2 and progress up to a minimum of TRL 4 and a maximum of TRL 6.
- The project duration can be up to 18 months and the project must end by 31 December 2026.
- Total funding of £1 million.
- The contract value must not exceed £250,000 (Projects of any size will be considered for funding)
- UKMFC members can apply
- UKMFC Advisory Board members cannot lead or advise bids

## Novel computational analysis tools for genomic data



- Augmenting the activities of the UKMFC Bioinformatics Working Group
- Tools to whole genome and / or metagenomics data sets.
- Linux, command-line, common language such as Python or C

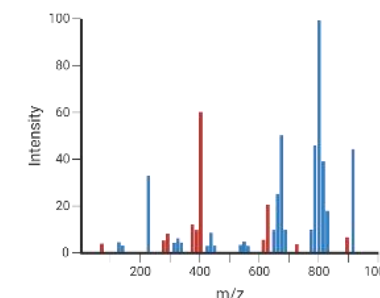
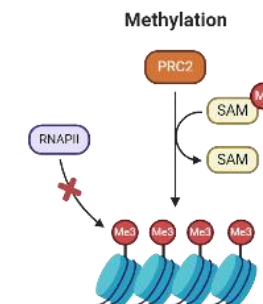
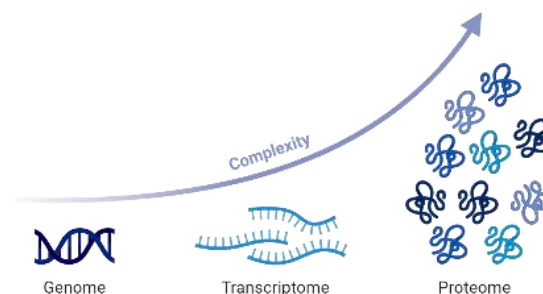


## Approaches for the identification and / or computational analysis of other *omic* signatures

**DASA** INNOVATION FOR A SAFER FUTURE

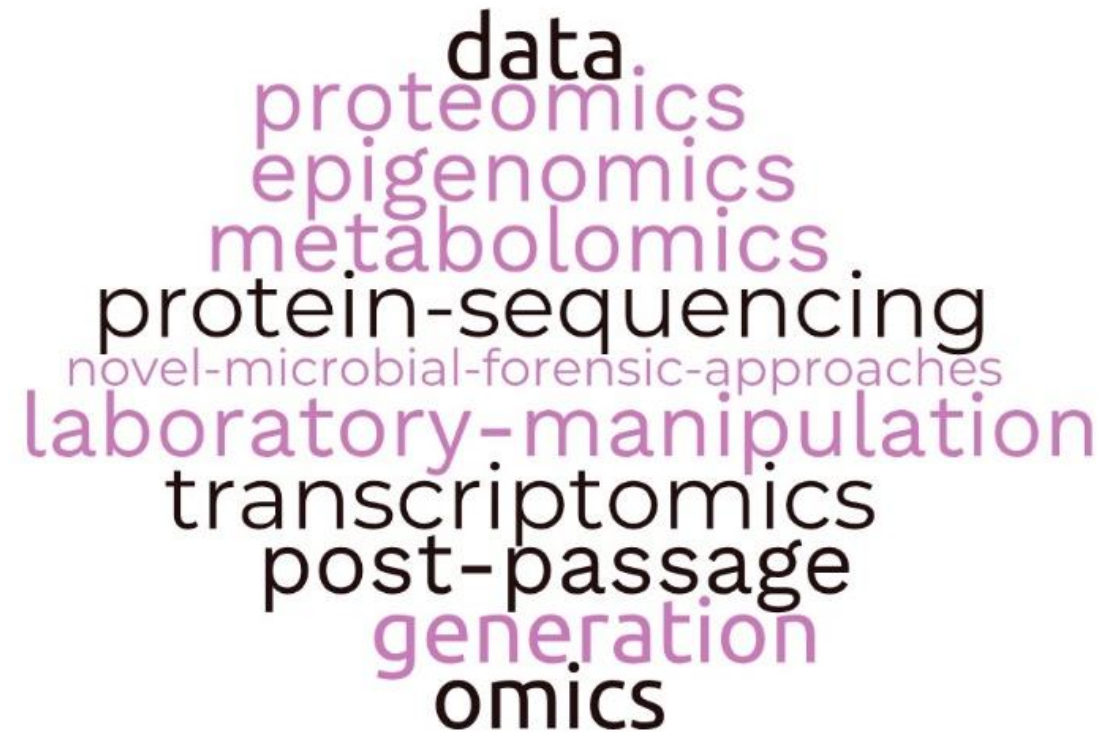
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Themed Competition 





- New avenues for Microbial Forensic investigations
- The generation and / or analysis of non-genomic signatures
- Robust signatures indicative of manipulation or laboratory growth
- Ideally those retained after infection



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SAFER  
FUTURE

# Future-proofing Biosecurity by Strengthening the UK's Microbial Forensic Capability

**Themed Competition**



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# **[dstl]** The Science Inside

Discover more



# Submitting Questions

Please submit or upvote any questions via slido



Scan above, or go to the website [sli.do](https://sli.do) and enter the code #MFC



# Closing remarks

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- Thank you for attending this Q&A event
- The slides from today's event along with the anonymised questions and answers will be uploaded to the competition page on the gov.uk website in the coming days.
- If you still have questions that you do not want to ask in this open forum we invite you to book a 1 to1 session with the customer team. Please supply us with as much information as possible when booking your session so that we can make sure the correct people are on the call.
- Slots are available on: -
  - 1 to 1 Session **15 & 21 January 2025**
- The link to these sessions can be found on the competition page on Gov.uk from 10 January 2025.

## Contact us

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[www.gov.uk/DASA](http://www.gov.uk/DASA)



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[accelerator@dstl.gov.uk](mailto:accelerator@dstl.gov.uk)



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01980 950000 option 3

# Thank you for attending!

We look forward to receiving your submissions by 12:00 hrs (GMT) on Tuesday 18<sup>th</sup> February 2025.