Science Meets Policy: From Regulation to Practice - Turning WGS into Action for Foodborne Outbreak Investigation
Rome 2-3 September, 2026

Data sharing and food safety: ASSICA's case study on Listeria monocytogenes and WGS implementation

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ASSICA
Associazione Industriali delle Carni e dei Salumi

Associazione Industriali delle Carni e dei Salumi - ASSICA

ASSICA is the national trade association representing producers of deli meats (processed pork and beef products) and **pig slaughterhouses**, within the framework of The General Confederation of Italian Industry.

ASSICA
Associazione Industriali delle Carni e dei Salumi

ASSICA's activities span several areas, including the definition of sectoral economic policy and the provision of information and support services to its approximately 180 members on economic/commercial, health, technical regulatory, legal and trade union matters.

Economic

Health/Vet

Legal

Trade union

Export

Sustainability

The italian swine sector in numbers (2025)

25,794

farms

92,752 if we include small and backyard farming

30,000

workers

900

processing companies

2,000 if we also include micro-enterprises

200

slaughterhouses

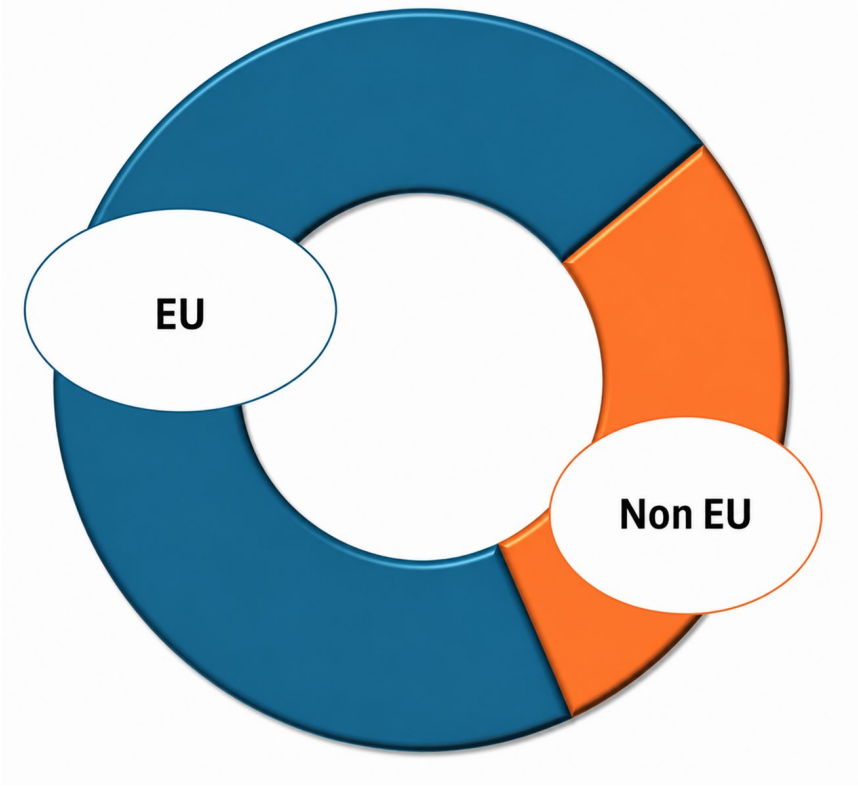
9.97 billion (€)

Total turnover

Source:
ASSICA analysis on UE, ISTAT and ISMEA official data

Deli meats exports in the world (2025)

231,645 ton
(+5.3% 2024)



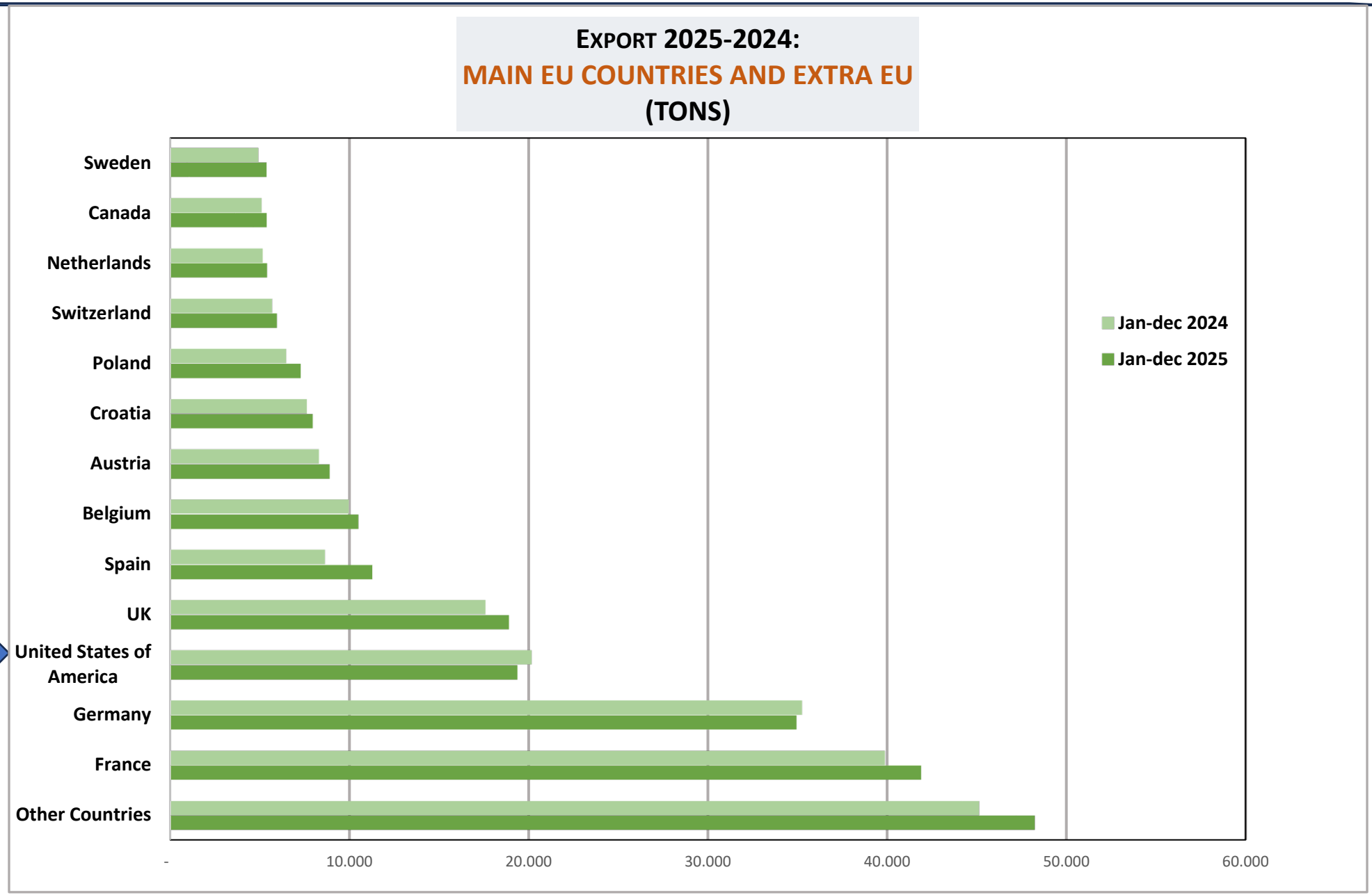
71%

29%

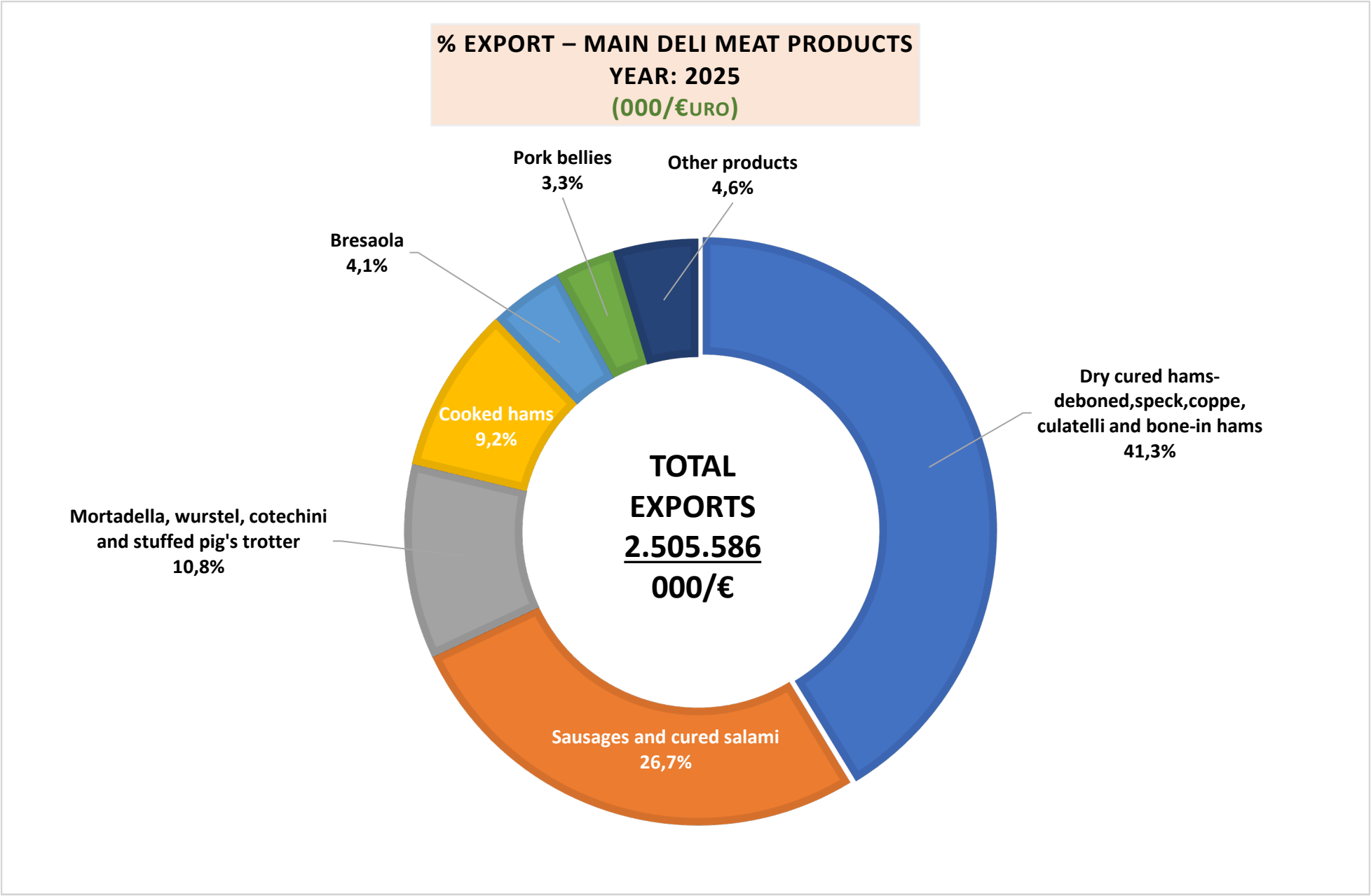
2.56 billion (€)
(+5.3% 2024)

Source:
ASSICA analysis on UE,
ISTAT and ISMEA official data

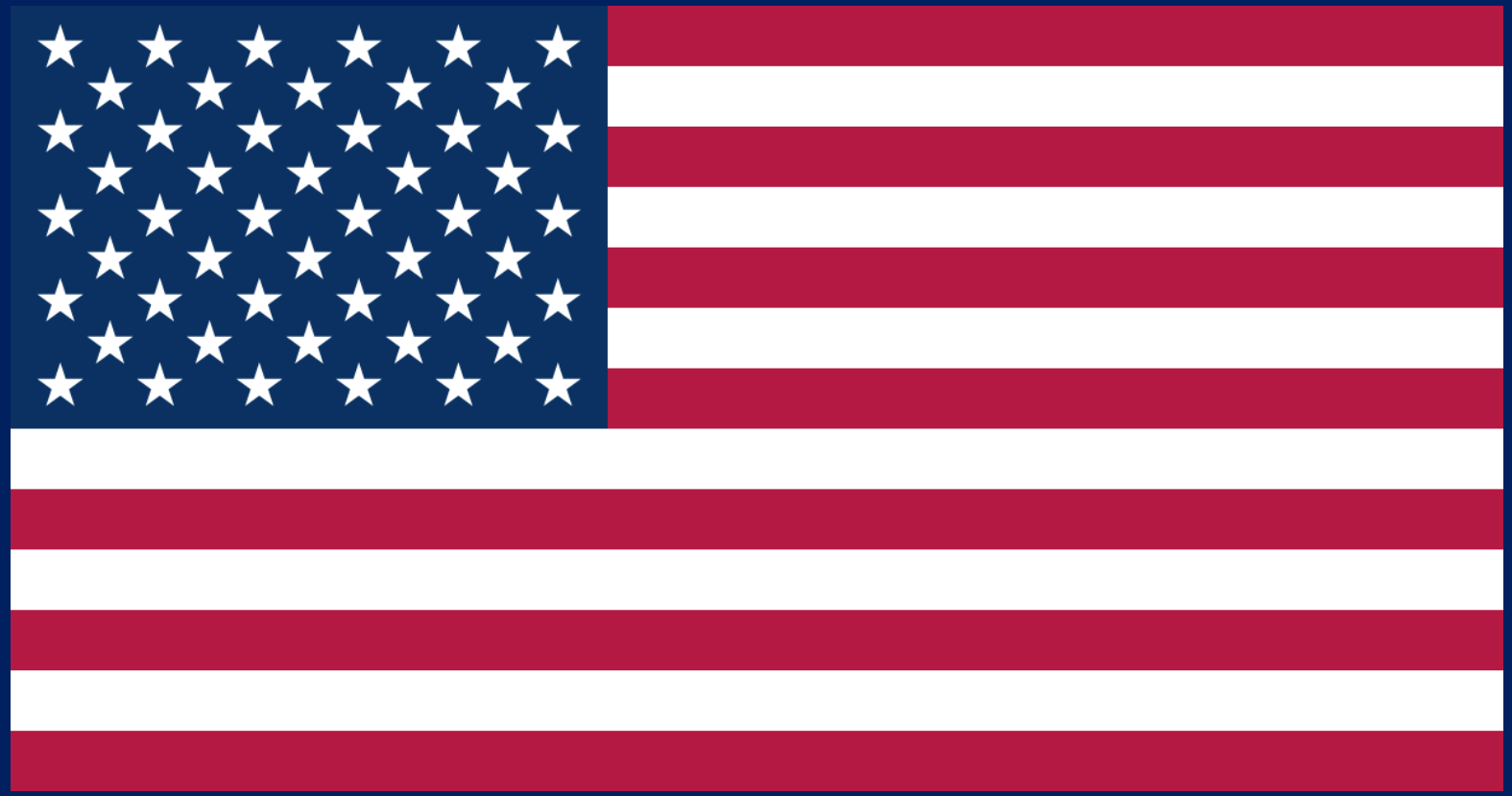
Main export markets



Products details



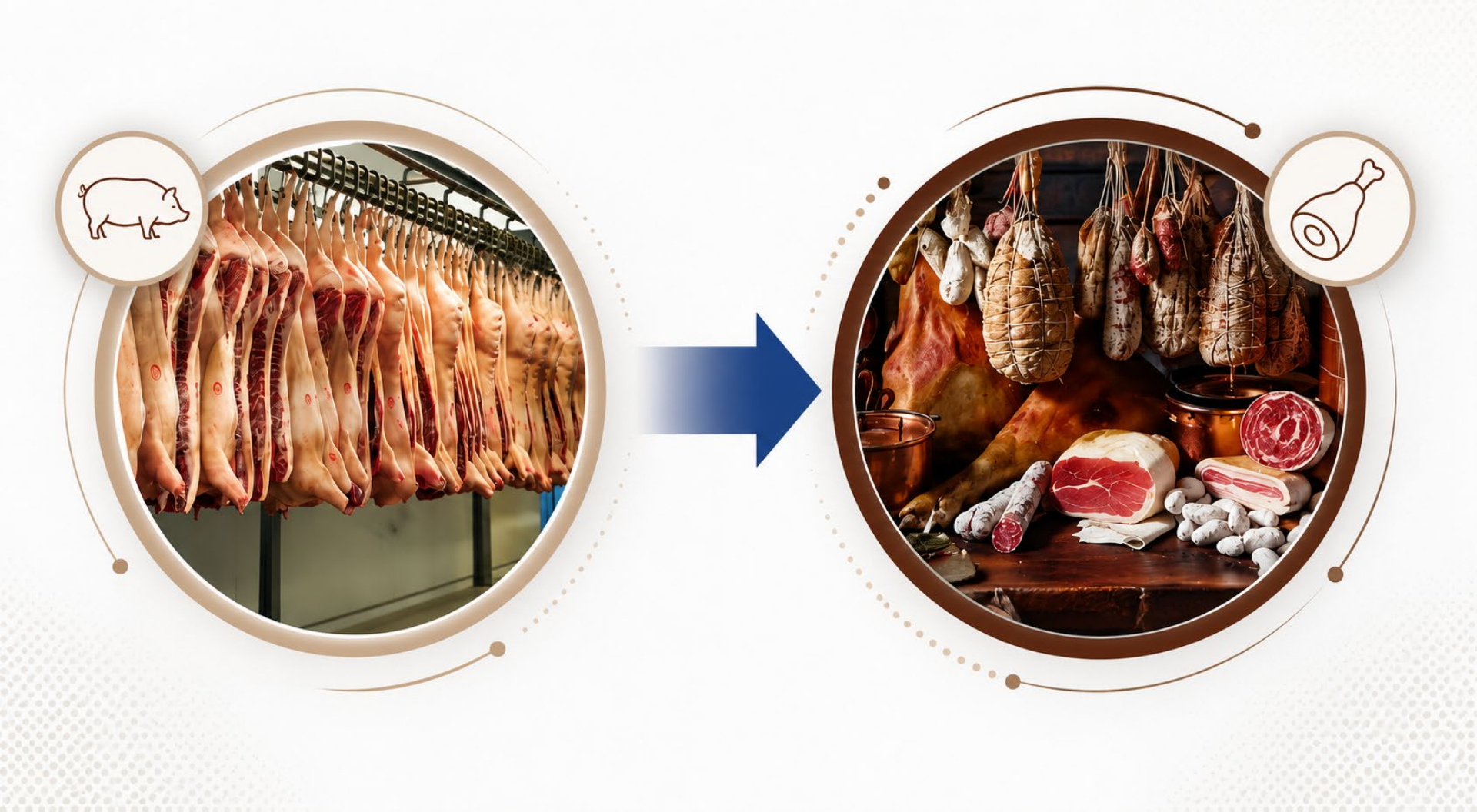
UNITED STATES OF AMERICA



146 eligible plants certified to export meat and meat products to the US (May 22, 2026)

source: ***USDA-FSIS official website***

Why WGS matters for the meat industry



Zero tolerance for *Listeria monocytogenes* in meat products.

USDA Food Safety and Inspection Service

An RTE product that has come into contact with a surface that tested positive for *Listeria monocytogenes* (as well as for other pathogens or toxins produced) **must be considered adulterated**.

Code of Federale Regulations

- 9 CFR 307.4 (facilities, equipment)
- 9CFR 416 (Sanitation - SOP/SSOP)
- 9CFR 417 (HACCP system)
- 9CFR 430 (control of *Listeria monocytogenes* in post-lethality exposed RTE products)
- 9CFR 317 (labelling, marking device and containers)
- FSIS Compliance Guideline: Controlling *Listeria monocytogenes* in Post-lethality Exposed Ready-to-Eat Meat and Poultry Products
- FSIS Directive 10,240.4: Verification Activities for the *Listeria monocytogenes* (Lm) Regulation and the Ready-to-Eat (RTE) Sampling Program
- FSIS Directive 10,300.1 - Intensified Verification Testing (IVT) Protocol for Sampling of Product, Food Contact Surfaces and Environmental Surfaces for *Listeria monocytogenes*

Case study

October 6, 2025: the Food Safety and Inspection Service (FSIS) collected and analyzed as part of import reinspection a sample from a shipment of ready-to-eat (RTE) ham produced by an italian establishment.

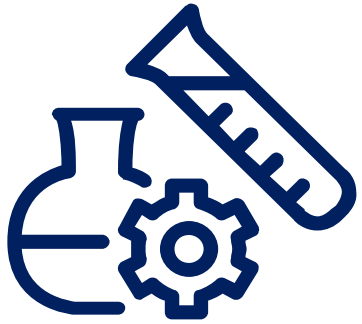
October 10, 2025: FSIS confirmed the presence of *Listeria monocytogenes* in the product from this shipment and refused entry to this product.

October 14, 2025: FSIS notified Italy's Ministry of Health of this Lm-positive sample requesting that Italy identify any products implicated by confirming whether there is additional product included on any other health certificates that would be affected by these results.

Case study

At the same time FSIS, as part of routine laboratory procedures for pathogen isolates obtained from microbiological analyses of domestic and imported products, **performed whole genome sequencing (WGS) on the *Listeria monocytogenes* isolate from this point-of-entry (POE) violation case.**

FSIS COLLECT DATE	ALLELE CODE
2025-10-06	LMO1.2-42.72.84.3482.5665 | 10/21/2025
2018-12-13	LMO1.2-42.72.84.3482.5665 | 10/21/2025



Case study

Harborage was suggested as closely related isolates were collected over time.

Competent Authorities confirmed the export ban and requested an in-depth investigation in order to find the source of contamination.

Case study - investigation

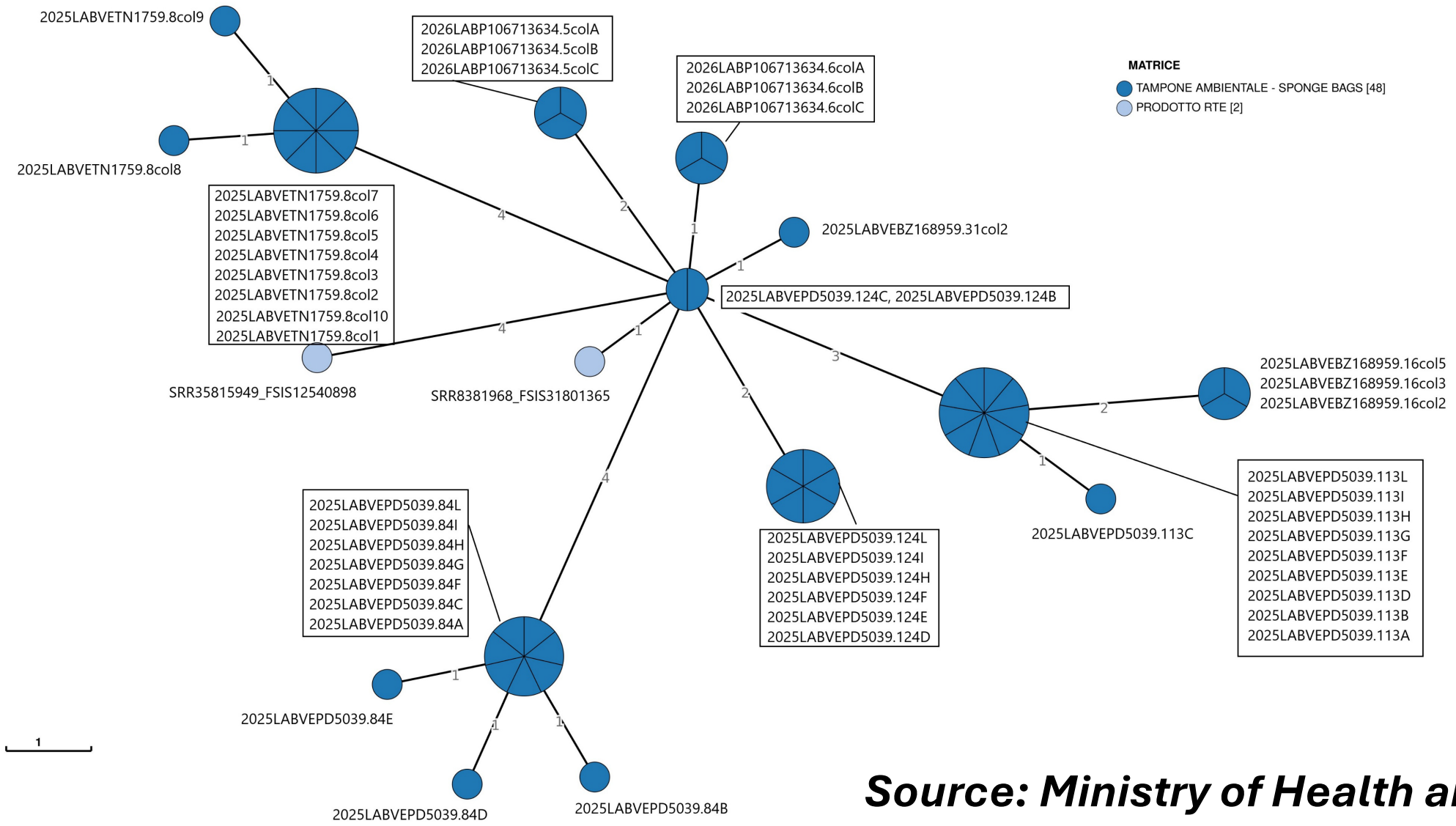
ACTIVITY:	SUPERVISION OF:
REVIEW OF SANITATION PROCEDURES (SSOP) AND HACCP	PLANT QUALITY ASSURANCE DEPARTMENT
REVIEW OF THE LM MANAGEMENT PROCEDURES	PLANT QUALITY ASSURANCE DEPARTMENT AND LOCAL VETERINARY SERVICE
TRAINING FOR PERSONNEL INVOLVED IN THE NC	PLANT QUALITY ASSURANCE DEPARTMENT AND LOCAL VETERINARY SERVICE
INTENSIFIED SAMPLING OF RTE PRODUCTS AND ENVIRONMENTAL SAMPLING OF FCS/NFCS/IFCS	LOCAL VETERINARY SERVICE AND NATIONAL REFERENCE LABORATORY FOR LM (IZS TERAMO)
MLST/WGS	**LOCAL VETERINARY SERVICE AND NATIONAL REFERENCE LABORATORY FOR LM (IZS TERAMO)**

Case study - intensified sampling

Listeria monocytogenes	*Sequence Type*
US Port of Entry (2018)	ST 37
US Port of Entry (2025)	ST 37
Plant intensified environmental sampling	ST 37
Plant intensified environmental sampling	ST 121, ST 87

Source: Ministry of Health and IZS Teramo

Case study - Minimum Spanning Tree ST 37



Source: Ministry of Health and IZS Teramo

Case study - WGS on ST 37

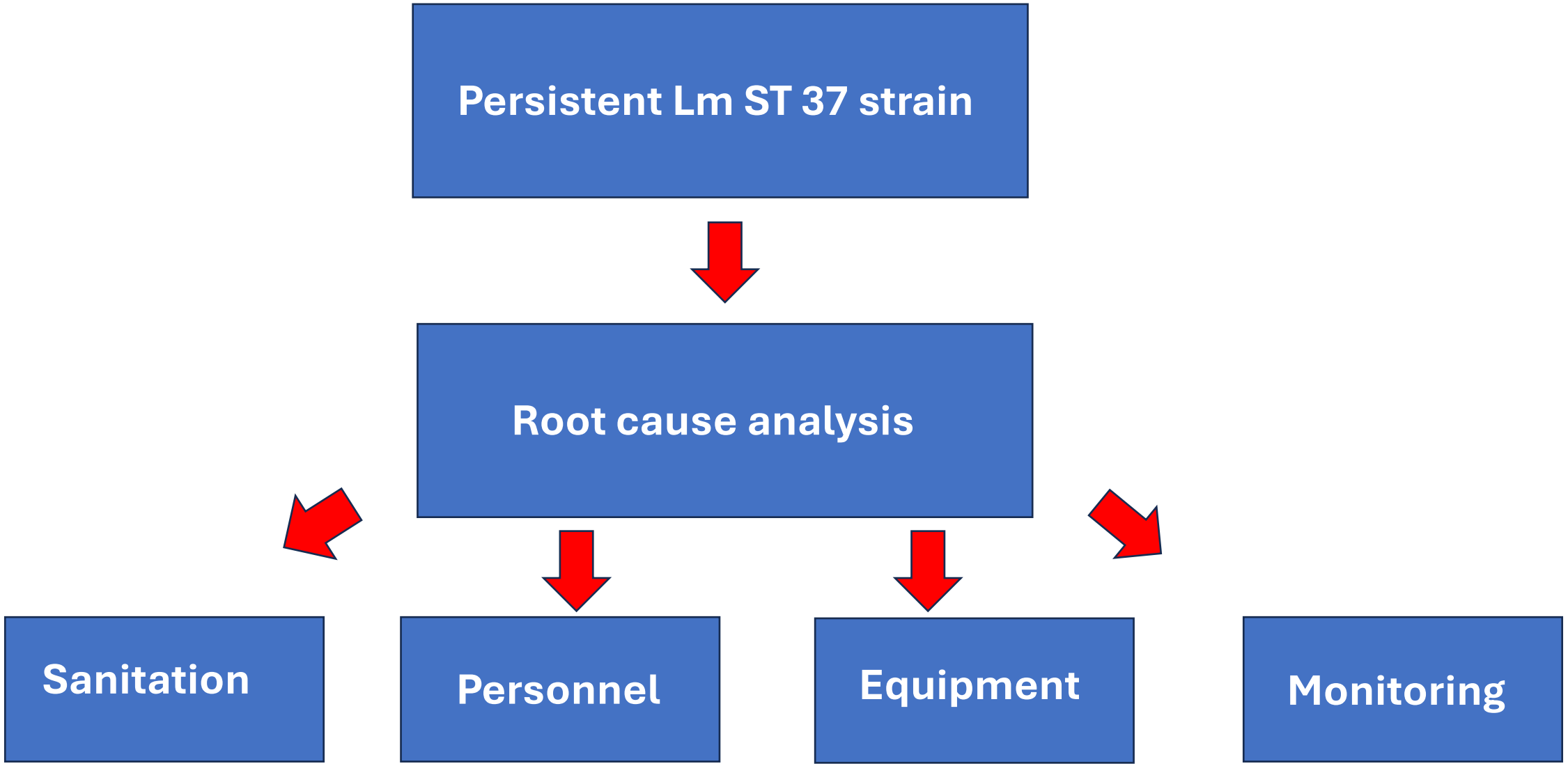
WHAT WGS REVEALED? SEVERAL DIFFERENT CLUSTERS

PERSISTENT STRAIN (*Same lineage circulating over time*)

MULTIPLE GENOMIC CORRELATED PROFILES

ENVIRONMENTAL RESERVOIR (HARBORAGE!)

Case study - From WGS evidence to root cause analysis



Case study – From investigation to prevention

Enhanced sanitation	Enhanced monitoring	Improved hygienic design	Personnel management	Training
Weekly extraordinary sanitation Monthly fumigation Chlorine tablets in drains	Increased number of environmental swabs Higher sampling frequency Targeted sampling of high-risk areas	Dedicated cleaning equipment Standardized foam application Calibrated dosing systems	Revised personnel flows Cleaning staff assigned by area Maintenance staff movement controlled	Listeria awareness Sanitation procedures GMP HACCP Hygiene Personnel flow management

Take home messages: WGS and investigations

Environmental sampling → **persistent ST 37 strain detected**

Operational observation → **cross department movements identified (cross contamination)**

Technical assessment → **incorrect detergent dosing and non-uniform foam distribution detected**

THANK YOU

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