World Organisation for Animal Health

Francesca Martelli - - UNITED_KINGDOM

WOAH Reference Laboratory Reports Activities 2025

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LABORATORY INFORMATION

***Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:**	Salmonellosis
***Address of laboratory:**	Woodham Lane, New Haw, Addestone, Surrey, KT15 3NB, United Kingdom
***Tel:**	0044 02080269630
***E-mail address:**	Francesca.martelli@apha.gov.uk
Website:	www.apha.gov.uk
***Name (including Title) of Head of Laboratory (Responsible Official):**	Dr Richard Lewis
***Name (including Title and Position) of WOAH Reference Expert:**	Dr Francesca Martelli
***Which of the following defines your laboratory? Check all that apply:**	Governmental

TOR1: DIAGNOSTIC METHODS

1. Did your laboratory perform diagnostic tests for the specified disease/topic for purposes such as disease diagnosis, screening of animals for export, surveillance, etc.? (Not for quality control, proficiency testing or staff training)

Yes

Diagnostic Test	Indicated in WOAH Manual (Yes/No)	Total number of test performed last year	
Indirect diagnostic tests		Nationally	Internationally
SAT (S. Pullorum/Gallinarum)	Yes	80	0
SAT (S. Typhimurium)	Yes	24	0
RSA (S. Pullorum/Gallinarum)	Yes	203	0
SAT (S. Abortusequi)	Yes	299	0
SAT (S. Dublin)	Yes	15	0
Direct diagnostic tests		Nationally	Internationally
Serotyping	Yes	1496	10
Phagetyping	Yes	1	0
Antimicrobial susceptibility testing (disk diffusion)	Yes	5773	0
Tests for live Salmonella vaccines	No	577	0
Monophasic STm PCR tests	No	4	0
Salmonella isolation culture	Yes	7954	0
Whole Genome Sequencing based serotyping	Yes	6979	10

Minimum inhibitory concentration	Yes	150	50

TOR2: REFERENCE MATERIAL

2. Did your laboratory produce or supply imported standard reference reagents officially recognised by WOAH?

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOAH Members?

Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient WOAH Member Countries	Country of recipients
Salmonella typing sera	Serotyping	27,950ml	19,953ml	NK	1	UNITED KINGDOM,
S. Pullorum control serum	SAT	40.5ml	39.25ml	NK	1	UNITED KINGDOM,
S. Pullorum antigen	SAT and RS	0	90 x 25ml	38 x 25ml	4	DENMARK, GERMANY, PHILIPPINES, SPAIN, UNITED KINGDOM,

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAH Members?

TOR3: NEW PROCEDURES

6. Did your laboratory develop new diagnostic methods for the designated pathogen or disease?

No

7. Did your laboratory validate diagnostic methods according to WOAH Standards for the designated pathogen or disease?

No

8. Did your laboratory develop new vaccines for the designated pathogen or disease?

9. Did your laboratory validate vaccines according to WOAH Standards for the designated pathogen or disease?

TOR4: DIAGNOSTIC TESTING FACILITIES

10. Did your laboratory carry out diagnostic testing for other WOAH Members?

Yes

Name of WOAH Member Country seeking assistance	Date	Which diagnostic test used	No. samples received for provision of diagnostic support	No. samples received for provision of confirmatory diagnoses
SAUDI ARABIA	2025-08-01	Serotyping and WGS based typing	10	0

11. Did your laboratory provide expert advice in technical consultancies on the request of an WOAH Member?

Yes

Name of the WOAH Member Country receiving a technical consultancy	Purpose	How the advice was provided
ITALY	Sharing experience on how whole genome sequencing can be implement for Salmonella typing	Virtual meeting
SIERRA LEONE	Sharing SOP for slide agglutination methodology	Email
AUSTRALIA	Consultancy to poultry industry in relation to Salmonella vaccination	Virtual meeting

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

Francesca Martelli - - UNITED_KINGDOM

12. Did your laboratory participate in international scientific studies in collaboration with WOAH Members other than the own?

Yes

Title of the study	Duration	Purpose of the study	Partners (Institutions)	WOAH Member Countries involved other than your country
Investigating the genomic and AMR diversity of non-typhoidal Salmonella (NTS) in Vietnamese chickens from the years 2017-2023	March 2024 to present	To determine the serovars and AMR phenotype and genotype of 200 poultry non-typhoidal Salmonella isolates from Vietnam (6 provinces) obtained during the study period (2017-2023)	FAO- Vietnam Vietnam's Department of Animal Health and Production (DAHP)	VIETNAM
Genomic Characterization and Antimicrobial Resistance Profiles of Non-Typhoidal Salmonella (NTS) Isolates from human and Chickens in Viet Nam	Jan to Dec 2025	To identify the serovars and antimicrobial resistance (AMR) profiles of NTS isolates from infection cases and food-borne outbreaks in humans and to Integrate compare these findings with data from NTS isolates from chickens	FAO- Vietnam Vietnam's Department of Animal Health and Production (DAHP) The Oxford University Clinical Research Unit (OUCRU), Ho Chi Mihn City, Vietnam	VIETNAM
Using whole genome sequencing (WGS), antibiotic susceptibility testing and epidemiological data to achieve insight into antibiotic resistance in Non-Typhoidal Salmonella (NTS) isolated from animals at slaughter in the Philippines	June 2023 to present	This study aims to apply Whole Genome Sequencing (WGS) to characterise the serovars and antimicrobial resistance (AMR) genotypes of non-typhoidal Salmonella (NTS) isolated from slaughtered animals in the Philippines.	The National Meat Inspection Service (NMIS), Department of Agriculture (DA),Philippines	PHILIPPINES

13. In exercising your activities, have you identified any regulatory research needs* relevant for WOAH?

No

TOR6: EPIZOOLOGICAL DATA

14. Did your Laboratory collect epidemiological data relevant to international disease control?

Yes

If the answer is yes, please provide details of the data collected:
Salmonella in animals and feed in Great Britain https://assets.publishing.service.gov.uk/media/68cbe908a1e4472207995d41/Salmonella_in_animals_and_feed_in_Great_Britain_2024.pdf

15. Did your laboratory disseminate epidemiological data that had been processed and analysed?

Yes

If the answer is yes, please provide details of the data collected:
Salmonella in animals and feed in Great Britain https://assets.publishing.service.gov.uk/media/68cbe908a1e4472207995d41/Salmonella_in_animals_and_feed_in_Great_Britain_2024.pdf Salmonella Infantis outbreak on six broiler units in Great Britain: investigation, epidemiology, and control, Journal of Applied Microbiology, Volume 136, Issue 3, March 2025, lxaf040, https://doi.org/10.1093/jambio/lxaf040 Salmonella in the slaughter sheep population in England and Wales, Journal of Applied Microbiology, Volume 136, Issue 10, October 2025, lxaf244, https://doi.org/10.1093/jambio/lxaf244

16. What method of dissemination of information is most often used by your laboratory? (Indicate in the appropriate box the number by category and list the details in the box)

a) Articles published in peer-reviewed journals:

7

1. Salmonella Infantis outbreak on six broiler units in Great Britain: investigation, epidemiology, and control, Journal of Applied Microbiology, Volume 136, Issue 3, March 2025, lxaf040, https://doi.org/10.1093/jambio/lxaf040

2. Reversible excision of the wzy locus in Salmonella Typhimurium may aid recovery following phage predation. PLoS Genet 21(5): e1011688. https://doi.org/10.1371/journal.pgen.1011688

3. Genomic Diversity and Antibiotic Resistance of Escherichia coli and Salmonella from Poultry Farms in Oyo State, Nigeria. Microorganisms, 13(6), 1174. https://doi.org/10.3390/microorganisms13061174

4. Salmonella in the slaughter sheep population in England and Wales, Journal of Applied Microbiology, Volume 136, Issue 10, October 2025, lxaf244, https://doi.org/10.1093/jambio/lxaf244

5. Attributable sources of the five most prevalent non-typhoidal Salmonella serovars across ten European countries, Journal of Infection, Volume 91, Issue 5, 106632, https://doi.org/10.1016/j.jinf.2025.106632

6. Genetic diversity and antimicrobial resistance profiles of Salmonella enterica in the broiler supply chain in Harare, Zimbabwe: tracking transmission from farm to table, Microbial Genomics, Volume 11, Issue 11, November 2025, https://doi.org/10.1099/mgen.0.001550

7. Niine, T., Viltrop, A., Nurmoja, I., Smith, R.P., Pavoni, E., Alborali, G.L., Ianiro, G., Di Bartolo, I., Tobias, T., Sassu, E.L., Burow, E. (2025) Assessment of the Biosecurity and Slaughter Practices in Selected European Abattoirs with a Focus on the Control of Salmonella and Hepatitis E Virus Contamination, Journal of Biosafety and Biosecurity, 7(4), 168-179. https://doi.org/10.1016/j.jobb.2025.11.001.

b) International conferences:

17

1. Hussaini, A., Guzinski, J., Snow, L. and Petrovska, L., Classical and time-measured phylogenetic and comparative genomics analyses of established and recently emerged determinative types of Salmonella Typhimurium in livestock and companion animals from the United Kingdom. Poster presentation, International Symposium on Salmonella & Salmonellosis, June 2025, Saint Malo, France.

2. Kolodziejczyk, G., Wanelik, K., Arnold, M., Couto Alves, A., Petrovska, L., Guzinski, J. and Ritchie, J. M., Can in-silico subtyping methods be used to infer definitive types for Salmonella Typhimurium? Poster presentation, International Symposium on Salmonella & Salmonellosis, June 2025, Saint Malo, France.

3. Trew, J., Guzinski, J., Cawthraw, S., Hussaini, A. and Petrovska, L., Cointegration of pESI plasmid in UK import S. Infantis isolates. Poster presentation, International Symposium on Salmonella & Salmonellosis, June 2025, Saint Malo, France.

4. Cawthraw, S., Guzinski, J., Wise, G., Trew, J., Abu Oun, M. and Petrovska, L., In-silico identification of the O:5-positive and O:5-negative variants of biphasic and monophasic Salmonella Typhimurium. Poster presentation, International Symposium on Salmonella & Salmonellosis, June 2025, Saint Malo, France.

5. Guzinski, J., Wise, G., Hussaini, A., Cawthraw, S. and Petrovska, L., Machine learning models as a replacement for traditional phage typing of Salmonella Typhimurium isolates using genomic data. Poster presentation, International Symposium on Salmonella & Salmonellosis, June 2025, Saint Malo, France.

6. Horizontal gene transfer of the multidrug resistant Salmonella Infantis megaplasmid between different Salmonella serovars and bacterial species in vitro Brook, Emma ; Swift, Ben ; Frosini, Siân-Marie ; Davies, Alistair ; Guzinski, Jaromir ; Cawthraw, Shaun ; Martelli, Francesca. Poster presentation, International Symposium on Salmonella & Salmonellosis, June 2025, Saint Malo, France.

7. A survey of Salmonella in sheep in England and Wales Shaun Cawthraw, Susie Lewis, Isaac Ring, Cam Sandu, Louise Chiverton, Lucy Snow and Adrienne Mackintosh. Poster presentation, International Symposium on Salmonella & Salmonellosis, June 2025, Saint Malo, France.

8. Eliminating Salmonella Infantis from poultry farms: experience from six UK broiler units Shaun Cawthraw , Andrew Wales, Jaromir Guzinski, Jahcub Trew, Isaac Ring, Tom Huby, Arslan Hussaini, Liljana Petrovska, Francesca Martelli. Poster presentation, International Symposium on Salmonella & Salmonellosis, June 2025, Saint Malo, France.

9. Operationalising Salmonella whole genome sequencing based typing into routine surveillance Francesca Martelli ; Adrienne Mackintosh; Jaromir Guzinski ; Liljana Petrovska, Gail Wise , Lucy Snow and Sarah Evans. Oral presentation, International Symposium on Salmonella & Salmonellosis, June 2025, Saint Malo, France.

10. Updating the DISCONTOOLS database: addressing research gaps in salmonellosis for better disease control Bortolami Laura, Alban Lis, Antonelli Pietro, Chemaly Marianne, Martelli Francesca, Istvan Szabo, Bonifait Laetitia, Barco Lisa. Poster presentation, International Symposium on Salmonella & Salmonellosis, June 2025, Saint Malo, France.

11. Non-typhoidal Salmonella sequence analysis from poultry farms in Plateau State, North Central Nigeria Fagbamila Idowu Oluwabunmi, Chisnall Tom, Ndahi Mwapu Dika, Davies Alistair, Adetunji Victoria, Ekeng Eme, Olawunmi Ajayi, Adebiyi Ini6, Sati Nancy, Patel Hemanti, Hendriksen Rene Andersen Jens Kirk, Card Roderick. Poster presentation, International Symposium on Salmonella & Salmonellosis, June 2025, Saint Malo, France.

12. ARAE, 29 June to 2 July, Berlin, - Whole-Genome Sequencing Analysis of Non-Typhoidal Salmonella Isolated from Animals at Slaughter in the Philippines Provides Insights into Circulating Serovars and Antimicrobial Resistance.

13. Philippine Society for Microbiology Conference, 28-29 August, virtual – Genomic Characterisation of Non-Typhoidal Salmonella from Slaughtered Animals in the Philippines Provides Insights into Circulating Serovars and Antimicrobial Resistance

14. Vietnam National Salmonella information dissemination conference and meeting, 19-20 November, virtual - Investigating the genomic and AMR diversity of non-typhoidal Salmonella isolates in chickens from 2017 to 2025

15. Utilising whole genome sequencing to investigate the genetic diversity of Salmonella populations on a UK pig farm- Poster presentation for Safepork conference, October 2025.

16. Individual based modelling of Salmonella transmission on outdoor pig farms – oral presentation at EU PAHW SOA15 Online meeting, November 2025.

17. Updating discontools for salmonellosis: identifying research gaps and future priorities in pig health. Bortolami Laura, Alban Lis, Antonelli Pietro, Chemaly Marianne, Martelli Francesca, Istvan Szabo, Bonifait Laetitia, Barco Lisa. Poster presentation for Safepork conference, October 2025.

c) National conferences:

3
Salmonella Infantis in GB poultry - The British Veterinary Poultry Association Winter meeting, Coventry
Salmonella in Poultry – industry event for UK layer farmers
One Health, One Team: How to be Salmonella Savvy, BSAVA Congress Proceedings 2025. Authors: Adrienne Conroy, Meg Rawlins and Lesley Larkin

d) Other (Provide website address or link to appropriate information):

1
Science in action: how APHA's Salmonella lab protects what we eat
https://aphascience.blog.gov.uk/2025/10/16/aphas-salmonella-lab/

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOAH Members?

Yes

a) Technical visit : 0

b) Seminars : 1

c) Hands-on training courses: 6

d) Internships (>1 month) 0

Type of technical training provided (a, b, c or d)	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
C	GHANA	6
C	GHANA	4
C	SIERRA LEONE	1
B	NIGERIA	1
C	VIETNAM	2
C	ZAMBIA	1
C	GHANA	6

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO 9001: 2015	BV certificate UK013916	ANIMAL PLANT HEALTH AGENCY - Certificate UK013916 - ISO 9001 - exp. 25-07-2026 (1).pdf
ISO 17025:2017	UKAS ceritficate	UKAS ISO17025 Certificate dec 25.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Various Salmonella surveillance and diagnostic tests	UKAS
Various serological and AMR tests	UKAS
Various research methodologies	Bureau Veritas

20. Does your laboratory maintain a "biorisk management system" for the pathogen and the disease concerned?

Yes

APHA complies with HSE working standards (https://www.hse.gov.uk/) and all staff are committed to promote health and safety and comply with current regulations and

internal procedures.

TOR9: SCIENTIFIC MEETINGS

21. Did your laboratory organise scientific meetings related to the pathogen in question on behalf of WOAH?

No

22. Did your laboratory participate in scientific meetings related to the pathogen in question on behalf of WOAH?

No

TOR10: NETWORK WITH WOAH REFERENCE LABORATORIES

23. Did your laboratory exchange information with other WOAH Reference Laboratories designated for the same pathogen or disease?

Yes

24. Are you a member of a network of WOAH Reference Laboratories designated for the same pathogen?

No

25. Did you organise or participate in inter-laboratory proficiency tests with WOAH Reference Laboratories designated for the same pathogen during the past 2 years?

Yes

Purpose of the proficiency test:	Role of your Reference Laboratory (organiser/ participant)	No. participating Laboratories	Participating WOAH Ref. Labs/ organising WOAH Ref Lab
Assess laboratory capability to conduct isolation and identification of Salmonella species to help maintain accreditation. Animal and Plant Health Agency Vetqas PT scheme PT0087 Salmonella in Animal Feed	Organiser/participant	27	UK
Assess laboratory capability to conduct isolation and identification of Salmonella species to help maintain accreditation. Animal and Plant Health Agency Vetqas PT scheme PT0088 Salmonella in Poultry	Organiser/participant	165	UK, Canada, Europe
Assess laboratory capability to conduct isolation and identification of Salmonella species to help maintain accreditation. Animal and Plant Health Agency Vetqas PT scheme PT0090 Control of Salmonella in Poultry Order (run for Defra for UK labs only)	Organiser/participant	17	UK
Assess laboratory capability to conduct isolation and identification of Salmonella species to help maintain accreditation. Animal and Plant Health Agency Vetqas PT scheme PT0084 Salmonella serotyping and culture	Organiser/participant	32	UK
Assess laboratory capability to conduct isolation and identification of Salmonella species to help maintain accreditation. Animal and Plant Health Agency Vetqas PT scheme PT0087 Salmonella in Animal Feed	Organiser/participant	27	UK

26. Did your laboratory collaborate with other WOAH Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest?

Yes

Title of the project or contract	Scope	Name(s) of relevant WOAH Reference Laboratories
Biosecurity measures to prevent and control AID on farm and during transport, taking into account effects on Animal Health and Welfare	Understand further how biosecurity contributes to Salmonella control on farm	Several EU national reference laboratories

Reinforcement of animal resilience	Understand further how pigs bred outdoors might be resilient to Salmonella infection	Several EU national reference laboratories

TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAH Reference Laboratories for the same pathogen during the past 2 years?

Yes

Purpose for inter-laboratory test comparisons1	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Name of the test	WOAH Member Countries
Assess laboratory capability to conduct isolation and identification of Salmonella species to help maintain accreditation. Animal and Plant Health Agency Vetqas PT scheme PT0087 Salmonella in Animal Feed	Organiser/participant	27	Isolation and identification of Salmonella in Animal Feed	UNITED KINGDOM,
Assess laboratory capability to conduct isolation and identification of Salmonella species to help maintain accreditation. Animal and Plant Health Agency Vetqas PT scheme PT0088 Salmonella in Poultry	Organiser/participant	165	isolation and identification of Salmonella species	UNITED KINGDOM,
Assess laboratory capability to conduct isolation and identification of Salmonella species to help maintain accreditation. Animal and Plant Health Agency Vetqas PT scheme PT0090 Control of Salmonella in Poultry Order (run for Defra for UK labs only)	Organiser/participant	17	isolation and identification of Salmonella species	UNITED KINGDOM,
Assess laboratory capability to conduct isolation and identification of Salmonella species to help maintain accreditation. Animal and Plant Health Agency Vetqas PT scheme PT0084 Salmonella serotyping and culture	Organiser/participant	32	Salmonella serotyping	UNITED KINGDOM,
Salmonella detection and serotyping EU-RL ringtrials	Participant	101	Detection and serotyping	UNITED KINGDOM,
EURL-Salmonella Proficiency Test Primary Production Stage 2025	Participant	35	Detection of Salmonella in chicken faeces samples	UNITED KINGDOM,
EURL-Salmonella combined Proficiency Test food-feed 2025	Participant	49	Detection of Salmonella in flaxseed	UNITED KINGDOM,

TOR12: EXPERT CONSULTANTS

28. Did your laboratory place expert consultants at the disposal of WOAH?

Yes

Kind of consultancy	Location	Subject (facultative)
The WOAH Salmonella expert contributed to the update of the chapter on Fowl Typhoid and Pullorum disease.	UK	Update on the chapter.

29. Additional comments regarding your report: