WOAH Reference Laboratory Reports Activities 2023

Activities in 2023

This report has been submitted : 7 juin 2024 16:57

Laboratory Information

Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:	Salmonellosis
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E-mail address:	Francesca.martelli@apha.gov.uk
Website:	www.apha.gov.uk
Name (including Title) of Head of Laboratory (Responsible Official):	David Holdsworth
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)		76	181
SAT (S. Typhimurium)		62	0
SAT (S. Abortusequi)		12	308
SAT (S. Dublin)		36	0
Direct diagnostic tests		Nationally	Internationally
Serotyping		4547	54
Phagetyping		857	0
Antimicrobial susceptibility testing		6166	148
Tests for live Salmonella vaccines		679	0
Monophasic STm PCR tests		26	0
Salmonella isolation culture		13198	0
Whole genome sequencing		7536	148

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	24,033ml	5,157ml	18,876ml	1	UNITED KINGDOM,
S. Pullorum control serum	SAT	35.25ml	NK	NK	1	UNITED KINGDOM,
S. Pullorum antigen	SAT and RS	12,825ml	6,050ml	6,325ml	1	UNITED KINGDOM,

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAH Members?

No

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?

No

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

No

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	2023-06-01	Serotyping, Whole Genome Sequencing, Antimicrobial susceptibility testing	24	0
UZBEKISTAN	2023-05-30	Serotyping, Whole Genome Sequencing, Antimicrobial susceptibility testing	24	0
PHILIPPINES	2023-06-07	Serotyping, Whole Genome Sequencing, Antimicrobial susceptibility testing	100	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
SAUDI ARABIA	Salmonella national control programmes, surveillance, isolation methods, serotyping, whole genome sequencing	In loco – training seminar
GHANA	Serotyping, isolation methods, whole genome sequencing	In loco – laboratory training
ZAMBIA	Salmonella sampling in broiler flocks, Salmonella national control programmes, surveillance	On-line consultation, e-mail, in-country visit
PHILIPPINES	Epidemiology of Salmonella in chicken and pigs	On-line

FRANCE	Salmonella control in weaning piglets	Email
PHILIPPINES	Two scientists from the National Meat Inspection Service (Department of Agriculture, Quezon City, Philippines) were hosted at APHA Weybridge for 2 weeks to receive training in microbiology, antimicrobial susceptibility testing and analysis of whole genome sequence data.	In person training in UK

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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
Prevalence and genomic characterization of Salmonella isolates from commercial chicken eggs retailed in traditional markets in Ghana	2 years	Establish prevalence of Salmonella in table eggs at retail, determine serovars, and assess antimicrobial susceptibilities & microbial genomes in One Health context.	University of Ghana	GHANA
Multidrug-resistant non-typhoidal Salmonella of public health significance recovered from migratory birds in Bangladesh	2 years	Establish prevalence of Salmonella in migratory birds determine serovars, and assess antimicrobial susceptibilities & microbial genomes in One Health context.	Bangladesh Livestock research institute	BANGLADESH
Nanopore sequencing for identification and characterization of antimicrobial-resistant Escherichia coli and Salmonella spp. from tilapia and shrimp sold at wet markets in Dhaka, Bangladesh	2 years	Establish prevalence of Salmonella and Escherichia coli in tilapia and shrimp at wet markets; assess antimicrobial susceptibilities & microbial genomes in One Health context.	CEFAS, Bangladesh Livestock research institute, Worldfish	BANGLADESH
Salmonella in poultry and pig farms in Nigeria	2 years	Establish prevalence and genomic diversity	National Veterinary Research Institute, University of Ibadan	NIGERIA
Whole-Genome Sequencing Analysis of Non-Typhoidal Salmonella Isolated from Animals at Slaughter in the Philippines	1 year	Provides Insights into Circulating Serovars and Antimicrobial Resistance Genotypes of One Health Significance	National Meat Inspection Service	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:
CARD R M; CHISNALL T; BEGUM R; SARKER M S; HOSSAIN M S; SAGOR M S; MAHMUD M A; UDDIN A S M A; KARIM M R; LINDAHL J F; SAMAD M S (2023) Multidrug-resistant non-typhoidal Salmonella of public health significance recovered from migratory birds in Bangladesh. Frontiers in Microbiology 14 1162657. https://doi.org/10.3389/fmicb.2023.1162657 SMITH R P; MAY H E; BUROW E; MEESTER M; TOBIAS T J; SASSU E-L; PAVONI E; DI BARTOLO I; PRIGGE C; WASYL D; ZMUDZKI J; VILTROP A; NURMOIA I; ZOCHE-GOLOB V; ALBORALI G L; ROMANTINI R; DORS A; KRUMOVA-VALCHEVA G L; KOLACKOVA I; APREA G; DASKALOV H (2023) Assessing pig farm biosecurity measures for the control of Salmonella on European farms. Epidemiology and Infection 151 E130.

https://dx.doi.org/10.1017/S0950268823001115
ARCHER EW; CHISNALL T; TANO-DEBRAH K; CARD RM; DUODU S; KUNADU APH (2023)
Prevalence and genomic characterization of Salmonella isolates from commercial chicken eggs retailed in traditional markets in Ghana.
Frontiers in Microbiology 14
https://doi.org/10.3389/fmicb.2023.1283835
Geographical and temporal distribution of multidrug-resistant Salmonella Infantis in Europe and the Americas (https://doi.org/10.3389/fmicb.2023.1244533)

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

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:

12
ARNOLD M; LAWES J; DAVIES R H; EVANS S (2023)
Study of Salmonella detection in laying hens using a Bayesian model.
Zoonoses and Public Health 70 (3) 248-255.
https://doi.org/10.1111/zph.13020
NALE J Y; AHMED B; HAIGH R; SHAN J; PHOTHAWORN P; THIENNIMITR P; GARCIA A; ABUOUN M; ANJUM M F; KORBSRISATE S; GALYOV E E; MALIK D J; CLOKIE M R J (2023)
Activity of a bacteriophage cocktail to control salmonella growth ex vivo in avian, porcine, and human epithelial cell cultures. PHAGE: Therapy, Applications, and Research 4 (1) 11-25.
https://doi.org/10.1089/phage.2023.0001
CARD R M; CHISNALL T; BEGUM R; SARKER M S; HOSSAIN M S; SAGOR M S; MAHMUD M A; UDDIN A S M A; KARIM M R; LINDAHL J F; SAMAD M S (2023)
Multidrug-resistant non-typhoidal Salmonella of public health significance recovered from migratory birds in Bangladesh.
Frontiers in Microbiology 14 1162657. https://doi.org/10.3389/fmicb.2023.1162657
LOPEZ-GARCIA A V; ABUOUN M; NUNEZ-GARCIA J; NALE J Y; GAYLOV E E;
PHOTHAWORN P; SUKJOI C; THIENNIMITR P; MALIK D J; KORBSRISATE S; CLOKIE M R J; ANJUM M F (2023)
Pathogen genomics and phage-based solutions for accurately identifying and controlling Salmonella pathogens. Frontiers in Microbiology 14 1166615.
https://doi.org/10.3389/fmicb.2023.1166615
OSLAND A M; OASTLER C; KONRAT K; NESSE L L; BROOK E; RICHTER A M; GOSLING R J; ARVAND M; VESTBY L K (2023)
Evaluation of disinfectant efficacy against biofilm-residing wild-type salmonella from the porcine industry.
Antibiotics 2 (7) 1189.
https://doi.org/10.3390/antibiotics12071189
SMITH R P; MAY H E; BUROW E; MEESTER M; TOBIAS T J; SASSU E-L; PAVONI E; DI BARTOLO I; PRIGGE C; WASYL D; ZMUDZKI J; VILTROP A; NURMOIA I; ZOCHE-GOLOB V; ALBORALI G L;
ROMANTINI R; DORS A; KRUMOVA-VALCHEVA G L; KOLACKOVA I; APREA G; DASKALOV H (2023)
Assessing pig farm biosecurity measures for the control of Salmonella on European farms.
Epidemiology and Infection 151 E130.
https://dx.doi.org/10.1017/S0950268823001115
ARCHER EW; CHISNALL T; TANO-DEBRAH K; CARD RM; DUODU S; KUNADU APH (2023)
Prevalence and genomic characterization of Salmonella isolates from commercial chicken eggs retailed in traditional markets in Ghana.
Frontiers in Microbiology 14
https://doi.org/10.3389/fmicb.2023.1283835
BETTRIDGE JM; SNOW LC; TANG Y; PETROVSKA L; LAWES J; SMITH RP (2023)
Using SNP addresses for Salmonella Typhimurium DT104 in routine veterinary outbreak detection.
Epidemiology and Infection
https://doi.org/10.1017/S0950268823001723
VILTROP A; NIINE T; TOBIAS T; SASSU EL; BARTOLO ID; PAVONI E; ALBORALI GL; BUROW E; SMITH RP (2023)
A Review of Slaughter Practices and Their Effectiveness to Control Microbial – esp. Salmonella spp. – Contamination of Pig Carcasses.
Journal of Food Protection 86 (11)
https://doi.org/10.1016/j.jfp.2023.100171
ARNOLD M; SMITH RP; MARTELLI F; DAVIES R (2024)
Bayesian evaluation of meat juice ELISA for detecting Salmonella in slaughtered pigs without specifying a cut-off. Zoonoses and Public Health
https://doi.org/10.1111/zph.13109

CAWTHRAW SA; GODDARD A; HUBY T; RING I; CHIVERTON L; MUELLER-DOBLIES D (2023)
Early vaccination of laying hens with the live bivalent Salmonella vaccine AviPro™ Salmonella DUO results in successful vaccine uptake and increased gut colonization. Frontiers in Microbiology 14
https://doi.org/10.3389/fmicb.2023.1327739
Geographical and temporal distribution of multidrug-resistant Salmonella Infantis in Europe and the Americas (https://doi.org/10.3389/fmicb.2023.1244533)

b) International conferences:

7
Thomas Chisnall Multidrug-resistant Salmonella enterica serotype Kentucky ST198 is widely distributed across poultry farms in Nigeria. Central Veterinary Research Institute, Zambia and University of Zambia, 12-14 July 2023.*
Idowu Fagbamila, Tom Chisnall, Carmen Losasso, Lisa Barco, Roderick Card. Multidrug-resistant Salmonella enterica serotype Kentucky ST198 is widely distributed across poultry farms in Nigeria. 33rd European Congress of Clinical Microbiology & Infectious Diseases, Copenhagen, Denmark, 15-18 April 2023.*
Successful vaccination of layer pullets during the first days of life using a bivalent live vaccine against Salmonella Enteritidis and Salmonella Typhimurium. World Vet. Poultry Association Congress, Verona, 2023
Smith, R. Assessing pig farm biosecurity measures for the control of Salmonella on European farms. Oral presentation at Safepork 2023, New Orleans, USA, May 2023.
Voller, C. Epidemiology of Hepatitis E Virus in UK pig farms. Oral presentation at Safepork 2023, New Orleans, USA, May 2023.
Waller, E. Prioritization of pig farm biosecurity measures for Salmonella and hepatitis E virus infection by European experts. Poster presentation at Safepork 2023, New Orleans, USA, May 2023.

Meester, M., Dubbert T., Smith R., Di Bartolo I., Tobias T. Control of hepatitis E virus infection on European pig farms; two observational studies combined. Oral presentation at ESPHM 2003, Thessaloniki, Greece, May 2023.

c) National conferences:

2
Ring I. 'Investigating the Efficacy of Disinfectants against Different Salmonella serovars'. Microbiology Society Conference (2023), Birmingham

Salmonella in GB poultry - current status', talk at the Elanco Layer Conference on June 2023, Market Drayton, including participation in a live Q & A session with other speakers. Contents of the talk and Q&A were used in part for an article in 'Ranger' magazine by the British Free Range Egg Producers Association: 'Salmonella control should remain high on priority list for egg producers' (Aug '23).

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

2
APHA Science blog summarising the findings of a research project investigating Salmonella in migratory birds in Bangladesh. World Antimicrobial Resistance (AMR) Awareness Week - APHA Science Blog
An APHA Science Blog which chronicled the visit by staff from the National Meat Inspection Service in the Philippines was published in December 2023

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 : 1

b) Seminars : 1

c) Hands-on training courses: 1

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
B	SAUDI ARABIA	5
C	GHANA	10
A	PHILIPPINES	2

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 ISO9001:2015 certificate	ANIMAL PLANT HEALTH AGENCY - Certificate UK013916 - ISO 9001 - exp. 25-07-2026.pdf
ISO17025:2017	UKAS ISO17025:2017 certificate	APHA UKAS cert to 25 Nov 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 ISO:17025:2017
Various serological and AMR tests	UKAS ISO:17025:2017
Various research methodologies	BV ISO9001:2015

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. Do you network (collaborate or share information) with other 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?

Yes

PURPOSE OF THE PROFICIENCY TESTS: 1	ROLE OF YOUR REFERENCE LABORATORY (ORGANISER/ PARTICIPANT)	NO. PARTICIPANTS	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	participant	19	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	participant	153	UK, Canada, Republic of Korea
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)	participant	20	UK
Assess laboratory capability to conduct isolation and identification of Salmonella species to help maintain accreditation. Animal and Plant Health Agency Vetqas	participant	35	UK

PT scheme PT0084 Salmonella serotyping and culture			

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
Salmonella investigations in poultry in Nigeria	Establish prevalence of Salmonella in poultry, determine serovars and assess antimicrobial susceptibilities & microbial genomes in One Health context	Istituto Zooprofilattico Sperimentale delle Venezie, National Reference Laboratory for Salmonella

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?

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	Participant	19	Salmonella Isolation	
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	Participant	153	Isolation and identification	
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)	Participant	20	Isolation and identification	
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	Participant	35	Isolation and identification	
Salmonella detection and serotyping EU-RL ringtrials	Participant	85	Detection and serotyping	

TOR12: EXPERT CONSULTANTS

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

Yes

KIND OF CONSULTANCY	Location	SUBJECT (FACULTATIVE)
Specific technical queries from WOAH	Email	Salmonella isolation

29. Additional comments regarding your report:

No