

OIE Reference Laboratory Reports Activities

Activities in 2019

This report has been submitted : 2020-01-10 13:28:40

Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	Salmonellosis
Address of laboratory:	New Haw, Addlestone Surrey KT15 3NB Weybridge UNITED KINGDOM
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Website:	
Name (including Title) of Head of Laboratory (Responsible Official):	Dr Kath Webster, Director of APHA Science Directorate
Name (including Title and Position) of OIE Reference Expert:	Dr Rob Davies, Head of OIE Reference Laboratory
Which of the following defines your laboratory? Check all that apply:	Governmental Research

ToR 1: To use, promote and disseminate diagnostic methods validated according to OIE Standards

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 OIE Manual (Yes/No)	Total number of test performed last year	
		Nationally	Internationally
Indirect diagnostic tests		Nationally	Internationally
SAT (S. Pullorum/Gallinarum)	Yes	55	0
RSA (S. Pullorum/Gallinarum)	Yes	571	7
SAT (S. Typhimurium)	Yes	12	41
SAT (S. Abortusequi)	Yes	282	26
SAT (S. Dublin)	Yes	19	41
Direct diagnostic tests		Nationally	Internationally
Serotyping	Yes	10480	0
Phage typing	Yes	767	0
Antimicrobial susceptibility test	Yes	4905	0
Tests for live Salmonella vaccines	Yes	363	0
Salmonella culture	Yes	11240	0
Monophasic STm PCR tests	Yes	64	0

ToR 2: To develop reference material in accordance with OIE requirements, and implement and promote the application of OIE Standards. To store and distribute to national laboratories biological reference products and any other reagents used in the diagnosis and control of the designated pathogens or disease.

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

No

3. Did your laboratory supply standard reference reagents (non OIE-approved) and/or other diagnostic reagents to OIE Member Countries?

Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient OIE Member Countries	Region of recipients
Salmonella typing sera	Serotyping	17,590ml	22,041ml	~600ml	Commercially sensitive information	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
S. Pullorum control serum	SAT	0ml	20.75ml	Not available	Commercially sensitive information	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
S. Pullorum antigen	RSA and SAT	11,300ml	3,275ml	3,440ml	Commercially sensitive information	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to OIE Member Countries?

No

ToR 3: To develop, standardise and validate, according to OIE Standards, new procedures for diagnosis and control of the designated pathogens or diseases

6. Did your laboratory develop new diagnostic methods validated according to OIE Standards for the designated pathogen or disease?

No

7. Did your laboratory develop new vaccines according to OIE Standards for the designated pathogen or disease?

No

ToR 4: To provide diagnostic testing facilities, and, where appropriate, scientific and technical advice on disease control measures to OIE Member Countries

8. Did your laboratory carry out diagnostic testing for other OIE Member Countries?

No

9. Did your laboratory provide expert advice in technical consultancies on the request of an OIE Member Country?

Yes

Name of the OIE Member Country receiving a technical consultancy	Purpose	How the advice was provided
GERMANY	Salmonella in partridges	Email
SAUDI ARABIA	Feed and broiler farm Salmonella control	Telephone
AUSTRALIA	Salmonella vaccines, feed, SE control	Email, on-site advice, teleconference
THE NETHERLANDS	Salmonella Abortusequi & Pullorum testing	Email
QATAR	Calf Salmonella	Email
FRANCE	Vaccine ID	Email, teleconference
BULGARIA	Vaccine ID	Email
SPAIN	Salmonella sampling	Email

ToR 5: To carry out and/or coordinate scientific and technical studies in collaboration with other laboratories, centres or organisations

10. Did your laboratory participate in international scientific studies in collaboration with OIE Member Countries other than the own?

Yes

Title of the study	Duration	Purpose of the study	Partners (Institutions)	OIE Member Countries involved other than your country
Salmonella vaccine study	1 year	To evaluate Salmonella vaccination of pigs	CEVA	UNITED KINGDOM
COMPARE	5 years	Four European Salmonella Typhimurium datasets collected to develop WGS-based source attribution methods	Several European Institutions	
COMPARE	5 years	Tools for source attribution using WGS data: Benchmarking of different methods	Several European Institutions	
COMPARE	5 years	Long term evolution of monophasic Salmonella Typhimurium in 5 European countries	Several European Institutions	
ENGAGE	2 years	Molecular Epidemiology of <i>S. Infantis</i> in Europe: insights into the success of the bacterial host and its parasitic pESI megaplasmid.	Several European Institutions	ITALY

ToR 6: To collect, process, analyse, publish and disseminate epizootiological data relevant to the designated pathogens or diseases

11. Did your Laboratory collect epizootiological data relevant to international disease control?

Yes

If the answer is yes, please provide details of the data collected:
Salmonella monitoring data provided to EFSA

12. Did your laboratory disseminate epizootiological data that had been processed and analysed?

Yes

If the answer is yes, please provide details of the data collected:
Salmonella in livestock report (GB)

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

a) Articles published in peer-reviewed journals: 14

Martelli, F., Kidd S., Lawes J. Surveillance for Salmonella in horses in Great Britain. *VETERINARY RECORD* 2019 184 (2), 56-58.

Alessia De Lucia, Shaun Cawthraw, Rob Davies, Richard Piers Smith, Carlo Bianco, Fabio Ostanello, Francesca Martelli. Correlation of anti-Salmonella antibodies between serum and oral fluid samples collected from finisher pigs, *Frontiers in Veterinary Science* 2019, 6, 489.

EFSA BIOHAZ Panel (EFSA Panel on Biological Hazards), Koutsoumanis, K, Allende, A, Alvarez-Ordóñez, A, Bolton, D, Bover-Cid, S, Chemaly, M, Davies, R, De Cesare, A, Hilbert, F, Lindqvist, R, Nauta, M, Peixe, L, Ru, G, Simmons, M, Skandamis, P, Suffredini, E, Jenkins, C, Malorny, B, Ribeiro Duarte, AS, Torpdahl, M, da Silva Felício, MT, Guerra, B, Rossi, M and Herman, L, 2019. Scientific Opinion on the whole genome sequencing and metagenomics for outbreak investigation, source attribution and risk assessment of food-borne microorganisms. *EFSA Journal* 2019;17(12):5898, 78 pp. <https://doi.org/10.2903/j.efsa.2019.5898>

Porter, S., Strain, SAJ., Bagdonaite, G., McDowell, SW., Bronckaers, T., Sherrey, M., Devine, P., Pascual-Linaza, AV., Spence, N., Porter, R., Guelbenzu-Gonzalo, M., Davies, RH., Lahuerta-Marin, A. (2019). Trends in Salmonella serovars and antimicrobial resistance in pigs and poultry in Northern Ireland between 1997 and 2016. *Veterinary Record* Published Online First: 27 November 2019. doi: 10.1136/vr.105640

Wales, A., Lawes, J., Davies, R., 2019. How to...: Advise clients about raw feeding dogs and cats. *BSAVA Companion vol 2019, Issue 8*, 10-15. doi:10.22233/20412495.0819.10

Wales A. and Davies R. (2019). Antimicrobial drug resistance in Salmonella and related organisms in poultry – what do we know about risk factors? *Proceedings of the 13th Turkey Science and Production Conference*.

Davies R.H., Lawes J.R., Wales A.D. (2019). Raw diets for dogs and cats: a review, with particular reference to microbiological hazards. *Journal of Small Animal Practice* 60 (6), 329-339

EFSA Panel on Biological Hazards (EFSA BIOHAZ Panel), Koutsoumanis, K., Allende, A., Alvarez-Ordóñez, A., Bolton, D., Bover Cid, S., et al. (2019). Salmonella control in poultry flocks and its public health impact. *EFSA Journal*, 17(2), 1471. <http://doi.org/10.2903/j.efsa.2019.5596>

Mensah N, Tang Y, Cawthraw S, AbuOun M, Fenner J, Thomson NR, Mather AE and Petrovska-Holmes L. Determining antimicrobial susceptibility in Salmonella enterica serovar Typhimurium through whole genome sequencing: a comparison against multiple phenotypic susceptibility testing methods. *BMC Microbiol.* 2019 Jul 2;19(1):148. doi: 10.1186/s12866-019-1520-9.

Mellor KC, Petrovska L, Thomson NR, Harris K, Reid SWJ, Mather AE. Antimicrobial Resistance Diversity Suggestive of Distinct Salmonella Typhimurium Sources or Selective Pressures in Food-Production Animals. *Front Microbiol.* 2019 Apr 12; 10: 708

Sévellec Y, Felten A, Radomski N, Granier SA, Le Hello S, Petrovska L, Mistou MY, Cadel-Six S. Genetic Diversity of Salmonella Derby from the Poultry Sector in Europe. *Pathogens.* 2019 Apr 4;8(2).

Branchu P, Charity O, Bawn M, Thilliez G, Dallman TJ, Petrovska L and Kingsley RA. SGI-4 in monophasic Salmonella Typhimurium ST34 is a novel ICE that enhances resistance to copper. *Front. Microbiol* 24 May 2019 <https://doi.org/10.3389/fmicb.2019.01118>.

Zhou Z, Alikhan NF, Mohamed K, Fan Y, the Agama Study Group and Achtman M. The Enterobase user's guide, with case studies on Salmonella transmissions, Yersinia pestis phylogeny, and Escherichia core genomic diversity. *Genome Res.* December 2019. , doi:10.1101/gr.251678.119.

Tang Y, Davies R and Petrovska L (2019). Identification of Genetic Features for Attenuation of Two Salmonella Enteritidis Vaccine Strains and Differentiation of These From Wildtype Isolates Using Whole Genome Sequencing. *Front. Vet. Sci.* 6:447. doi: 10.3389/fvets.2019.00447

b) International conferences: 6

- Oastler, C.E. Phenotypic and Genotypic Characterisation of Biofilm-Forming Salmonella enterica Serovars Isolated from Pig and Poultry Production Environments, One Health EJP Annual Scientific Meeting, 2019, Dublin, Ireland.

- Davies R. Salmonella control in layers, Australian PVS Conference 2019 in Adelaide, Australia

- Davies R. Salmonella control in layers, Australian Egg Industry Salmonella Forum Meeting 2019 in Adelaide, Australia

- Martelli, F. Salmonella control from farm to fork (pigs), Italian Society of Swine pathology (SIPAS), March 2019
 - Storey N., Lemma F., Randall L., Horton R., Cawthraw S., Rambaldi M., Martelli F., Anjum M. AMR Persistence on a Pig Farm with Reduced Antimicrobial Usage. Proceedings of the 1st Annual Scientific Meeting of the One Health European Joint Programme on Foodborne Zoonoses, Antimicrobial Resistance and Emerging Threats, Dublin 22nd-24th of May 2019, pp20.

- Rambaldi M., Card R., Dugget N., Anjum M., Ostanello F., Martelli F. Whole Genome Sequencing demonstrates that Rodents are a Reservoir of Antimicrobial Resistant Escherichia coli and Salmonella on Pig Proceedings of the 1st Annual Scientific Meeting of the One Health European Joint Programme on Foodborne Zoonoses, Antimicrobial Resistance and Emerging Threats, Dublin 22nd-24th of May 2019, pp22.

c) National conferences: 2

- Oastler, C.E. Biofilm Phenotype vs Genotype, Pig and Poultry associated Salmonella, The 6th European Congress on Biofilms, EUROBIOFILMS 2019, Glasgow, UK.

- Oastler, C.E. Biofilm Phenotype vs Genotype, In Vitro Biofilm Models', The 6th European Congress on Biofilms, EUROBIOFILMS 2019, Glasgow, UK.

d) Other:

(Provide website address or link to appropriate information) 5

- Gosling, R., Oastler, C.E. Before disinfectants – why cleaning is so important, <https://www.thewebinarvet.com/sponsors/Hysolv>, June 2019.

- Gosling, R.J. and Dimmack, L. Disinfection – products and best practice. <https://www.thewebinarvet.com/sponsors/Hysolv>, June 2019

- Salmonellosis. Chapter 3.9.8. OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, 8th Edition (Published 2019), World Organisation for Animal Health, Paris, France; 1735-1752.

- Fowl Typhoid and Pullorum Disease. Chapter 3.3.11. OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, 8th Edition, (Published 2019) World Organisation for Animal Health, Paris, France; 914-930.

- 3 articles on Salmonella – in Ranger magazine special Salmonella supplement – Becky Gosling, Chris Nichols, Rob Davies

ToR 7: To provide scientific and technical training for personnel from OIE Member Countries

To recommend the prescribed and alternative tests or vaccines as OIE Standards

14. Did your laboratory provide scientific and technical training to laboratory personnel from other OIE Member Countries?

Yes

a) Technical visits: 1

b) Seminars: 0

c) Hands-on training courses: 2

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	Nigeria	2
a	Ghana	1

ToR 8: To maintain a system of quality assurance, biosafety and biosecurity relevant for the pathogen and the disease concerned

15. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)
ISO 9001	ISO9001-2015_Certificate.pdf
ISO 17025	UKAS_certificate.pdf

16. 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:17025:2015)
Various research methodologies	LRQA (ISO:9001:2015)

17. Does your laboratory maintain a “biorisk management system” for the pathogen and the disease concerned?

Yes

(See Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, Chapter 1.1.4)

ToR 9: To organise and participate in scientific meetings on behalf of the OIE

18. Did your laboratory organise scientific meetings on behalf of the OIE?

No

19. Did your laboratory participate in scientific meetings on behalf of the OIE?

No

ToR 10: To establish and maintain a network with other OIE Reference Laboratories designated for the same pathogen or disease and organise regular inter-laboratory proficiency testing to ensure comparability of results

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

Yes

21. Was your laboratory involved in maintaining a network with OIE Reference Laboratories designated for the same pathogen or disease by organising or participating in proficiency tests?

Yes

Purpose of the proficiency tests: ¹	Role of your Reference Laboratory (organiser/participant)	No. participants	Participating OIE Ref. Labs/ organising OIE 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	24	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	154	UK, Canada, Italy, Germany
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	22	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	participant	36	UK, Germany

¹ validation of a diagnostic protocol: specify the test; quality control of vaccines: specify the vaccine type, etc.

22. Did your laboratory collaborate with other OIE 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 OIE Reference Laboratories
Salmonella Coeln	EU-wide investigation	Various
Monophasic Salmonella Typhimurium	mST outbreak in Iceland investigation	Iceland, Norway
PHE and ECDC/Efsa collaboration	WGS outbreak investigations relating to International trade in SE-contaminated eggs within Europe	Various

ToR 11: To organise inter-laboratory proficiency testing with laboratories other than OIE Reference Laboratories for the same pathogens and diseases to ensure equivalence of results

23. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than OIE Reference Laboratories for the same disease?

Yes

Note: See Interlaboratory test comparisons in: Laboratory Proficiency Testing at: <http://www.oie.int/en/our-scientific-expertise/reference-laboratories/proficiency-testing> see point 1.3

Purpose for inter-laboratory test comparisons ¹	No. participating laboratories	Region(s) of participating OIE 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	24	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
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	154	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
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)	22	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
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	36	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Salmonella detection and serotyping EU-RL ring trials	36	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East

ToR 12: To place expert consultants at the disposal of the OIE

24. Did your laboratory place expert consultants at the disposal of the OIE?

Yes

Kind of consultancy	Location	Subject (facultative)
Response to ad hoc queries	Email	Diagnosis and control
Involvement in OIE ad hoc expert group evaluating a Salmonella serotyping test	Email	Review and validation

25. Additional comments regarding your report:

This report was compiled by Christopher Nichols and Kate Newton on behalf of Rob Davies.

