WOAH Reference Laboratory Reports Activities 2023

Activities in 2023

This report has been submitted : 7 juin 2024 10:07

Laboratory Information

Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:	Salmonellosis
Address of laboratory:	Diedersdorfer Weg 1, 12277 Berlin, Germany
Tel.:	+49-30 184 12 24221
E-mail address:	istvan.szabo@bfr.bund.de
Website:	www. bfr.bund.de
Name (including Title) of Head of Laboratory (Responsible Official):	Dr. Istvan Szabo
Name (including Title and Position) of WOAH Reference Expert:	Dr. Istvan Szabo
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
Serotyping of Salmonella isolates		3278	0
Test Salmonella Enteritidis Vaccine Strains		38	0
S. Typhimurium, monophasic (conformation PCR)		343	0
Next Generation Sequencing of Salmonella		1452	0
Antimicrobial susceptibility test (MIC) of Salmonella strains		847	0
PCR (conformation of d-Tartrat+S. Paratyphi B)		34	0
Real-time PCR (conformation of Salmonella spp)		232	0
Direct diagnostic tests		Nationally	Internationally

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	RELATED DIAGNOSTIC		AMOUNT SUPPLIED	AMOUNT SUPPLIED	NO. OF RECIPIENT	COUNTRY OF

AVAILABLE	TEST	PRODUCED/ PROVIDE	NATIONALLY (ML, MG)	INTERNATIONALLY (ML, MG)	WOAH MEMBER COUNTRIES	RECIPIENTS
Salmonella Reference control DNA	PCR for detection of Salmonella spp.	10.11.2023	0	2 x 200µl	1	UKRAINE,

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
UGANDA	2024-04-24	Salmonella Serotyping	397	0

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

No

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
FARMED – Fast Antimicrobial Resistance and Mobile-Element Detection using metagenomics for animal and human on-site tests (One Health European Joint Programme) since January 2020	5 years	Fast Antimicrobial Resistance and Mobile- Element Detection using meta-genomics for animal and human on-site tests	1. Animal and Pant Health Agency (UK) 2. Technical University of Denmark 3. Istituto Superiore di Sanità (ISS) (IT) 4. Sciensano (Belgium) 5. Statens Serum Institut (DK) 6. Complutense University of Madrid (ES) 7. Wageningen Bioveterinary Research (NL) 8. Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale" (IT) BELGIUM DENMARK ITALY SPAIN THE NETHERLANDS UNITED KINGDOM	BELGIUM DENMARK ITALY SPAIN THE NETHERLANDS UNITED KINGDOM
From farm to fork: epidemiological study, genetic				

characterization and plasmid identification of antibiotic resistant Salmonella strains isolated along the food chain in Marche Region	2 years	Analysis of antibiotic resistance determinants in Salmonella	University of Urbino, Italy Department of Biomolecular Sciences	ITALY
Training in the use of bioinformatic platforms in the framework of foodborn disease control	2 year	Investigations of the occurrence of extended spectrum beta-lactamases in Salmonella of non-human origin and their association with mobile genetic elements	University of the Basque Country (UPV/EHU)	SPAIN

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:
Data is collected in frame of the following programs: - national (General Administrative Provision, AVV) and European Salmonella monitoring programs - national control programs for Salmonella (Directive 2003/99/EC and Regulation (EC) No 2160/2003) in breeding flocks of Gallus gallus (Commission Regulation (EU) No 200/2010), in laying hens of Gallus gallus (Commission regulation (EU) No 517/2011), in flocks of broilers (Commission regulation (EU) No 200/2012) and in flocks of turkeys (Commission regulation (EU) No 1190/2012) The collected data is an important part of the national and international human outbreak investigations. It is also the base for the investigation of different epidemiological issues on the level of primary production.

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 Data is part of the national zoonoses report "Pathogens of zoonoses in Germany" on the epidemiological situation in the food chain, which appears as a BfR science booklet and is available for download. The data used to compile this national zoonoses report are also used for reporting zoonoses to the European Food Safety Authority (EFSA).

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:

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Simon, S.; Lamparter, M. C.; Pietsch, M.; Borowiak, M.; Fruth, A.; Rabsch, W.; Fischer, J., Zoono-ses in Food-Chain Animals with Respect to Human Disease and Public Health Relevance. In Zoon-oses: Infections Affecting Humans and Animals, Sing, A., Ed. Springer International Publishing: Cham, 2023; Vol. -, pp 1-33.

Burkhardt, W.; Salzinger, C.; Fischer, J.; Malorny, B.; Fischer, M.; Szabo, I., The nematode worm Caenorhabditis elegans as an animal experiment replacement for assessing the virulence of di. Frontiers in Microbiology 2023, 14 (-), 1188679.

Diedrich, J.; Hammerl, J. A.; Johne, A.; Kappenstein, O.; Loeffler, C.; Nöckler, K.; Rosner, B.; Spielmeyer, A.; Szabo, I.; Richter, M., Auswirkungen des Klimawandels auf lebensmittelassoziierte Infektionen und Intoxikationen. Journal of Health Monitoring 2023, 8 (S3), 11393.

Linde, J.; Szabo, I.; Tausch, S. H.; Deneke, C.; Methner, U., Clonal relation between Salmonella enterica subspecies enterica serovar Dublin strains of bovine and food origin in Germany. Fron-tiers in Veterinary Science 2023, 10 (-), 1081611.

Wilking, H.; Beermann, S.; Boone, I.; Dreesman, J.; Fingerle, V.; Gethmann, J.; Lachmann, R.; Lamparter, M.; Mayer-Scholl, A.; Meinen, A.; Schöl, M.; Suwono, B., Bakterielle Zoonosen mit Bedeutung für den öffentlichen Gesundheitsschutz in Deutschland – Vorkommen, Verbreitung und Übertragungswege. Bundesgesundheitsblatt - Gesundheitsforschung - Gesundheitsschutz 2023, 66 (6), -.

Forth, L. F.; Brinks, E.; Denay, G.; Fawzy, A.; Fiedler, S.; Fuchs, J.; Geuthner, A.-C.; Hankeln, T.; Hiller, E.; Murr, L.; Petersen, H.; Reiting, R.; Schäfers, C.; Schwab, C.;

Szabo, K.; Thürmer, A.; Wöhlke, A.; Fischer, J.; Lüth, S.; Projahn, M.; Stingl, K.; Borowiak, M.; Deneke, C.; Malorny, B.; Uelze, L., Impact of wet-lab protocols on quality of whole-genome short-read sequences from foodborne microbial pathogens. Frontiers in Microbiology 2023, 14.

Russo I, Fischer J, Uelze L, Napoleoni M, Schiavano GF, Andreoni F, Brandi G, Amagliani G. From farm to fork: Spread of a multidrug resistant Salmonella Infantis clone encoding blaCTX-M-1 on pESI-like plasmids in Central Italy. Int J Food Microbiol. 2024 Jan 30;410:110490. doi: 10.1016/j.ijfoodmicro.2023.110490. Epub 2023 Nov

Bartsch LJ, Borowiak, M, Deneke C, Gruetzke J, Hammerl JA, Malorny B, Szabo I, Alter T, Nguyen KK, Fischer J. Genetic characterization of a multidrug-resistant Salmonella enterica serovar Agona isolated from a dietary supplement in Germany. ront. Microbiol., 15 November 2023 Sec. Food Microbiology Volume 14 - 2023 | https://doi.org/10.3389/fmicb.2023.1284929

b) International conferences:

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Lamparter, M. C., A Salmonella cgMLST validation study for accreditation in Germany. In 27th EURL-Salmonella workshop, Bilthoven (Online), 2023.7.

Szabo, I., NRL for Salmonella Germany. In EURL Salmonella Workshop 2023, -: Bilthoven (Online), 2023.

c) National conferences:

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Fischer, J., Salmonella-Ausbrüche – Aufklärungsarbeiten am NRL für Salmonella. In Forum für den Öffentlichen Gesundheitsdienst, Berlin, Germany, 2023.

Fischer, J., Salmonella-Ausbrüche – Aufklärungsarbeiten am NRL für Salmonella. In Jenaer Sal-monella-Workshop, Jena, Germany, 2023.

Simon, S.; Pietsch, M.; Fischer, J.; Lamparter, M. C.; Meinen, A.; Flieger, A., Salmonellose beim Menschen - von alten Bekannten und neuen Vehikeln. In Jenaer Salmonella-Workshop, -: Jena, Germany, 2023.

Szabo, I., Pathogenität von Salmonellen - Versuche am Modelorganismus Caenorhabditis ele-gans. In 52. Seminar über Versuchstiere und Tierversuche (GV-SOLAS), Berlin, Germany (onli-ne), 2023.

Szabo, I., Salmonellen in Nutztieren, Lebens- und Futtermitteln in Deutschland: Bericht aus dem NRL für Salmonella. In Jenaer Salmonella-Workshop, Jena, Germany, 2023.

Fischer, J., IST-Zustand zu Metadaten und zur Kommunikation bei Cluster/Ausbruchsanalysen am BfR - Beispiel NRL für Salmonella. In Bund-Länder Unterarbeitsgruppe zum Nationalen WGS-Datenmanagement, Berlin, Germany (virtuell), 2023.

Fischer, J., Priorisierte Cluster: Daten, Erfahrungen und Erkenntnisse aus dem NRL für Salmo-nella In Bund-Länder unterarbeitsgruppe zum Nationalen WGS-Datenmanagement, Berlin, Germany, 2023.

Szabo, I.; Lamparter, M.; Fischer, J., NRL für Salmonella. In NRL-Symposium, Berlin, Germany, 2023.

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

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

No

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO 17025		AkkreditierungsurkundeD-PL-18583-02-00.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Serotyping of Salmonella spp.	German National Accreditation Body
Detection of Salmonella spp. (ISO 6579-1)	German National Accreditation Body
Detection of Salmonella spp. with PCR and real-time PCR	German National Accreditation Body
Identification of Salmonella Enteritidis with real-time PCR	German National Accreditation Body
Conformation of d-Tartrat fermentation in Salmonella spp. with PCR	German National Accreditation Body
Identification of S. Enteritidis Vaccine Strains with real-time PCR	German National Accreditation Body
Identification of mono- and bipasich S. Typhimurium with realtime PCR	German National Accreditation Body

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

Yes

In accordance with § 6 German Ordinance on Hazardous Substances (GefStoffV) a risk assessment for the Hazardous Substances used in laboratory (including pathogens) has to be carried out and measures/countermeasures against biodocumented risk needs to be identified. Furthermore, the laboratory rooms in laboratory area are approved as L2 or S2 laboratories by the competent authotity, that requires biorisk measures.

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?

No

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?

No

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
EURL-Salmonella proficiency test : Salmonella detection in food and feed	participant	51	Detection of Salmonella spp. ISO 6579-1	
EURL-Salmonella proficiency test : Salmonella detection in primary production	participant	37	Detection of Salmonella spp. ISO 6579-1	
EURL proficiency test : Salmonella serotyping	participant	32	Salmonella Serotyping	
EURL proficiency test : Salmonella Whole Genome Sequencing and cluster analysis of Salmonella strains	participant	20	Whole Genome Sequencing	

TOR12: EXPERT CONSULTANTS

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

No

29. Additional comments regarding your report:

Yes

1.

The main task of our laboratory is the identification and analysis of Salmonella isolates originating from feed, food, environment, wild life and primary production, using serological and molecular biological methods. The primary analysis of clinical material (serum, blood, urine) is not the focus of our laboratory. The analytical work starts with Salmonella isolates, isolated and provided by different laboratories in Germany. For conducting investigations of outbreaks and epidemiological studies, a variety molecular biological methods have been established.

Within the frame of his work, the National Reference Laboratory for Salmonella in Germany can provide scientific and technical advice on disease control measures to WOAH Member Countries. However such request are rather seldom.

2.

The participants of the reported proficiency tests organized by the European Union Reference Laboratory (EURL) are mainly : the obligatory 27 National Reference Laboratories for Salmonella in the 27 EU Member States, and other European (potential) candidate countries, as well as the European Free Trade Association (EFTA) countries and the UK. Out of these Germany, Italy and United Kingdom are WOAH reference laboratories for Salmonellosis.