World Organisation for Animal Health

Istvan Szabo - - GERMANY

WOAH Reference Laboratory Reports Activities 2024

This report has been submitted: 21 janvier 2025 15:57

LABORATORY INFORMATION

***Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:**	Salmonellosis
***Address of laboratory:**	Diedersdorfer Weg 1 D-12277 Berlin
***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
Direct diagnostic tests		Nationally	Internationally
Test Salmonella Enteritidis Vaccine Strains		38	0
S. Typhimurium, monophasic (conformation PCR)		327	0
Next Generation Sequencing of		1195	

Salmonella			0
Antimicrobial susceptibility test (MIC) of Salmonella strains		809	0
PCR (conformation of d-Tartrat+S. Paratyphi B)		45	0
Real-time PCR (conformation of Salmonella spp)		181	0
Serotyping of Salmonella		2989	0

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?

No

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?

No

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
BULGARIA	Questions about the performance of the latex agglutination test for Salmonella abortusequi	Multiple phone calls and email communications

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
From farm to fork: epidemiological study, genetic Istvan Szabo - Salmonellosis - GERMANY WOAH Reference Laboratory Reports Activities 2023 3 characterization and plasmid identification of antibiotic resistant Salmonella strains isolated along the food chain in Marche Region	4 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	3 years	Investigations of the occurrence of extended spectrum betalactamases in Salmonella of nonhuman origin and their association with mobile genetic elements	University of the Basque Country (UPV/EHU)	SPAIN
Loss of immuno-reactive O-chain in Salmonella enterica	3 years	WGS-based characterization and in silico prediction of Salmonella with rough phenotype	U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition,	UNITED STATES OF AMERICA
			International Livestock Research Institute, Kampala, Uganda; International Livestock Research Institute, Nairobi, Kenya; Institute for Animal Hygiene and Environmental Health, Freie University of Berlin, Germany; Department of Health Management, Atlantic Veterinary College, University of Prince Edward Island,	

BUILT UGANDA	3	Non-typhoidal Salmonella in the pork value chain in Uganda	Charlottetown, PE, Canada; Veterinary Public Health Institute, University of Bern, Bern, Switzerland; Graduate School for Cellular and Biomedical Sciences, University of Bern, Bern, Switzerland; Department of Animal Production, Ministry of Agriculture, Animal Industry and Fisheries, Entebbe, Uganda; College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University, Kampala, Uganda; Department for Biological Safety, German Federal Institute for Risk Assessment, BfR, Berlin, Germany	CANADA GERMANY KENYA SWITZERLAND UGANDA

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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V. Kivali, K. Roesel, I. Dohoo, L. Alinaitwe, J. K. Bugeza, J. J. Hoona, D. R. Mugizi, C. Kankya, S. Dang-Xuan, I. Szabo, U. Rösler, A. Friese and E. A. J. Cook. Non-typhoidal Salmonella among slaughterhouse workers and in the pork value chain in selected districts of Uganda, Frontiers in Veterinary Science. 2024. Doi: 10.3389/fvets.2024.1427773.

M. C. Lamparter, M. Borowiak, P. Kutzer, P. Schlieben, I. Szabo and J. Fischer. Salmonella enterica subsp. enterica serovar Paratyphi B from mute swan (Cygnus olor): complete genome sequence features point towards invasive variant potential, Microbiology Resource Announcements. 2024. Doi: 10.1128/mra.01056-23

B. M. Rosner, S. Simon, S. Nielsen, S. Köberl-Jelovcan, P. Gymoese, D. Werber, A. Meinen, M. Pietsch, A. Flieger, J. Fischer, M. C. Lamparter, F. Küffel, F. Költringer, C. Kornschober, L. Müller, G. Falkenhorst and S. Maritschnik. Multinational investigation of a Salmonella Umbilo outbreak reveals rocket salad and baby spinach as the likely infection vehicles, Europe, 2024, Eurosurveillance : bulletin européen sur les maladies transmissibles / Commission des Communautés Européennes. 2024. Doi: 10.2807/1560-7917.Es.2024.29.46.2400728.

I. Russo, J. Fischer, L. Uelze, M. Napoleoni, G. F. Schivano, F. Andreoni, G. Brandi and G. Amagliani. From farm to fork: Spread of a multidrug resistant Salmonella Infantis clone encoding blaCTX-M-1 on pESI-like plasmids in Central Italy, International Journal of Food Microbiology. 2024. Doi: 10.1016/j.ijfoodmicro.2023.110490.

b) International conferences:

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A. Atxaerandio-Landa, M. Borowiak, A. Groger, A. Irrgang and J. Fischer. Transmission mechanism of the blaCTX-M-1 gene mediated by certain IncI1 plasmids in Salmonella isolates from non-human origin in Germany. 34th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), 2024-04-27/2024-04-30, Barcelona, Spain

L. J. Bartsch, M. Lamparter, M. Pietsch, M. Borowiak, C. Salzinger, B. Baumann, S. Simon, B. Malorny, I. Szabo and J. Fischer In-depth characterisation and cluster analysis of Salmonella Muenchen isolates from non-human sources in Germany. 34th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), 2024-04-27/2024-04-30, Barcelona, Spain,

M. Borowiak, S. Simon, M. Pietsch, I. Szabo, J. Fischer and M. Lamparter Salmonella Paratyphi B: Update on the two-faced Salmonella serovar from non-human sample surveillance in Germany. 34th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), 2024-04-27/2024-04-30, Barcelona, Spain,

L. Giese, M. Pietsch, S. Simon, E. Trost, J. Fischer, M. Lampartner, G. Falkenhorst and A. Meinen Opportunities and challenges of Integrated Genomic Surveillance based on Salmonella surveillance data from 2020 to 2023, Germany. European Scientific Conference on Applied Infectious Disease Epidemiology, 2024-11-20/2024-11-22, Stockholm, Sweden.

V. Kivali, K. Roesel, I. Dohoo, L. Alinaitwe, J. Bugeza, J. J. Hoona, D. Mugizi Rwabiita, C. Kankya, S. Dang-Xuan, I. Szabo, U. Rösler, A. Friese and E. A. J. Cook Non-typhoidal Salmonella among slaughterhouse workers and in the pork value chain in Uganda. World One Health

Conference, 2024-09-20/2024-09-23, Cape Town, South Afrika.

S. Simon, M. Pietsch, E. Trost, A. Meinen, J. Fischer and M. Lamparter Genome-based surveillance of Salmonella enterica serovar Enteritidis at the National Reference Center (NRC) for Salmonella and other bacterial enteric pathogens. 7th Joint Microbiology & Infection Conference of the German Society for Hygiene and Microbiology (DGHM) and the Association of General and Applied Microbiology (VAAM), 2024-06-02/2024-06-05, Würzburg, Germany.

c) National conferences:

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S. Hadziabdic and I. Szabo. Bakterielle Dekontamination von Konsumeiern durch UV-C und UV-C-LED Techniken. 24. Fachtagung für Fleisch- und Geflügelfleischhygiene, 2024-03-06, Berlin, Germany.

J. Wenderlein, A. Ströhlein, L. Uelze, I. Szabo, B. Malorny, M. Lamparter and J. Fischer. Light in the dark: Mit WGS raue Salmonellen entschlüsseln. Tagung der DVG-Fachgruppe AVID Schwerpunkt Bakteriologie, 2024-09-11/2024-09-13, Kloster Banz, Germany.

J. Fischer. Neue Erfahrungen aus dem NRL für Salmonella „Umgang mit Salmonellen im Gesundheitsamt – Genomische Surveillance und andere Neuigkeiten" - Online-Fortbildungsreihe „Webseminar – Wissenschaft trifft Praxis" 2024-03-06 RKI Webseminar.

J. Fischer. Ausbruchsanalysen am NRL für Salmonella - aktuelle Herausforderungen und Lösungswege Seminar zu Salmonella-Ausbrüchen für den ÖGD am RKI 2024-03-06 Berlin, Germany.

M. Lamparter Einblicke in die Welt der Salmonellen – von Routinearbeiten bis zum Forschungsprojekt Nationale Referenz-, Konsiliar- und Speziallabore – Forschung und Diagnostik in der mikrobiologischen Lebensmittelsicherheit NRL, Autumn School 2024-10-08/2024-10-09 Berlin, Germany.

S. Kleta and J. Fischer Ausbruchsaufklärung in Zeiten der Gesamtgenomsequenzierung – Sind wir endlich am Ziel? Nationale Referenz-, Konsiliar- und Speziallabore – Forschung und Diagnostik in der mikrobiologischen Lebensmittelsicherheit NRL, Autumn School 2024-10-08/2024-10-09 Berlin, Germany.

B.-A. Tenhagen, I. Szabo, A. Käsbohrer and C. Plaza-Rodriguez Bekämpfung der Salmonellen beim Geflügel 106. Fachgespräch über Geflügelkrankheiten, DVG-Fachgruppe Geflügelkrankheiten und Dt. Gruppe der WVPA 2024-05-02/-05-03 Hannover, Germany.

M. Lamparter and J. Fischer. Einblicke in die Welt der Salmonellen: WGS-Aktivitäten am NRL für Salmonella 4. Status Quo Workshop NGS am LGL 2024-06-13/2024-06-14 Oberschleißheim, Germany.

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

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I. Szabo and J. Fischer 2024, Diagnosis Card Salmonellosis, Network for wildlife health surveillance in Europe, https://ewda.org/diagnosis-cards/ European Wildlife Disease Association, 2024-02-25, https://ewda.org/wp-content/uploads/2024/02/EWDA_DiagnCard_Salmonella_def.pdf

J. Fischer. WGS-basierte Ausbruchsuntersuchung und die sich daraus ergebenden neuen Herausforderungen in den NRL am BfR, 43. AFFL Sitzung 2024-05-07/2024-05-08 Stuttgart, Germany.

I. Szabo. Tierversuche in der Abteilung „Biologische Sicherheit" Kolloquium Abteilung 4 2024-02-13 Berlin, Germany.

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	Pdf	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 during the past 2 years?

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 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
EURL-Salmonella proficiency test: Salmonella detection in food	participant	31	Detection of Salmonella spp. ISO 6579-1	
EURL-Salmonella proficiency test: Salmonella detection in primary production stage	participant	37	Detection of Salmonella spp. ISO 6579-1	
EURL-Salmonella proficiency test: Salmonella Serotyping	participant	32	Serotyping of Salmonella spp. ISO 6579-3	
EURL-Salmonella proficiency test: Salmonella Cluster Analysis	participant	20	Whole Genome Sequencing	
EURL-Salmonella proficiency test: Salmonella detection in Live Bivalve	participant	22	Detection of Salmonella spp. ISO 6579-1	

Molluscs			
Salmonella detection in poultry	organiser	52	Detection of Salmonella spp. ISO 6579-1

TOR12: EXPERT CONSULTANTS

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

No

29. Additional comments regarding your report:

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.