

# WOAH Reference Laboratory Reports Activities 2022

## Activities in 2022

This report has been submitted : 25 avril 2023 15:00

### Laboratory Information

<b>Name of disease (or topic) for which you are a designated WOA Reference Laboratory:</b>	Avian Influenza
<b>Address of laboratory:</b>	Südufer 10
<b>Tel.:</b>	00493835171546
<b>E-mail address:</b>	timh.harder@fli.de
<b>Website:</b>	www.fli.de
<b>Name (including Title) of Head of Laboratory (Responsible Official):</b>	Prof. Dr. Martin Beer
<b>Name (including Title and Position) of WOA Reference Expert:</b>	Prof. Dr. Timm Harder
<b>Which of the following defines your laboratory? Check all that apply:</b>	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 WOA Manual (Yes/No)	Total number of test performed last year	
Indirect diagnostic tests		Nationally	Internationally
ELISA	Yes	220	0
HI	Yes	120	0
Direct diagnostic tests		Nationally	Internationally
Virus isolation	Yes	105	10
RT-qPCR	Yes	7105	135
RT-PCR	Yes	200	40

Sanger-Sequencing	Yes	25	15
NGS Sequencing	Yes	300	30
IVPI	Yes	10	0

## TOR2: REFERENCE MATERIAL

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

No

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

Yes

TYPE OF REAGENT AVAILABLE	RELATED DIAGNOSTIC TEST	PRODUCED/ PROVIDE	AMOUNT SUPPLIED NATIONALLY (ML, MG)	AMOUNT SUPPLIED INTERNATIONALLY (ML, MG)	NO. OF RECIPIENT WOA?H MEMBER COUNTRIES	COUNTRY OF RECIPIENTS
Virus RNA	RT-qPCR, RT-PCR	on demand	41 x 0.1 mL	0		
Virus antigen, inactivated	HI	on demand	53 x 0.5 mL	0	0	
Virus isolate	various	on demand	5 x 1 mL	1 x 1 mL	1	Europe
Primer and probes	RT-qPCR	on demand	0	4	1	Europe
Immune sera	HI	on demand	4	22	3	Asia and Pacific Europe

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOA?H Members?

No

## TOR3: NEW PROCEDURES

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

Yes

NAME OF THE NEW TEST OR DIAGNOSTIC METHOD DEVELOPED	DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)
Virus enrichment and RNA purification	Exploring environmental matrices for detecting AIV we validated surface water and sediments for virus enrichment and purification: Ahrens AK, Selinka HC, Mettenleiter TC, Beer M, Harder TC. Exploring surface water as a transmission medium of avian influenza viruses - systematic infection studies in mallards. Emerg Microbes Infect. 2022 Dec;11(1):1250-1261. doi: 10.1080/22221751.2022.2065937 Titel anhand dieser DOI in Citavi-Projekt übernehmen. PMID: 35473641

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

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

No

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

No

**TOR4: DIAGNOSTIC TESTING FACILITIES**

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

Yes

NAME OF WOAHP 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
BANGLADESH	2022-10-06	NGS sequencing	40	0
SUDAN	2022-12-06	RT-qPCR, NGS sequencing	35	35

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

No

**TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES**

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

Yes

Title of the study	Duration	PURPOSE OF THE STUDY	PARTNERS (INSTITUTIONS)	WOAHP MEMBER COUNTRIES INVOLVED OTHER THAN YOUR COUNTRY
Incidence of AIV infections in poultry in Bangladesh	2 yrs	Surveillance and virus characterization in poultry production systems in Bangladesh	Bangladesh Agricultural University, CEVA Vaccine Producer	BANGLADESH FRANCE INDIA

**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:

Molecular epidemiological data on HPAIV outbreaks in Germany.

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:

Molecular epidemiological data on HPAIV outbreaks in Germany; exchange with other European national and European reference labs.

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:

10

Ahrens AK, Selinka HC, Mettenleiter TC, Beer M, Harder TC. Exploring surface water as a transmission medium of avian influenza viruses - systematic infection studies in mallards. *Emerg Microbes Infect.* 2022; 11: 1250-1261. Doi: 10.1080/22221751.2022.2065937.

Günther A, Krone O, Svansson V, Pohlmann A, King J, Hallgrímsson GT, Skarphéðinsson KH, Sigurðardóttir H, Jónsson SR, Beer M, Brugger B, Harder T. Iceland as Stepping Stone for Spread of Highly Pathogenic Avian Influenza Virus between Europe and North America. *Emerg Infect Dis.* 2022; 28: 2383-2388. doi: 10.3201/eid2812.221086

Hassan KE, Ahrens AK, Ali A, El-Kady MF, Hafez HM, Mettenleiter TC, Beer M, Harder T. Improved Subtyping of Avian Influenza Viruses Using an RT-qPCR-Based Low Density Array: 'Riems Influenza a Typing Array', Version 2 (RITA-2). *Viruses.* 2022; 14: 415. doi: 10.3390/v14020415. PMID: 35216008.

King J, Harder T, Globig A, Stacker L, Günther A, Grund C, Beer M, Pohlmann A. Highly pathogenic avian influenza virus incursions of subtype H5N8, H5N5, H5N1, H5N4, and H5N3 in Germany during 2020-21. *Virus Evol.* 2022; 8: veac035. doi: 10.1093/ve/veac035.

King J, Staubach C, Lüder C, Koethe S, Günther A, Stacker L, Rubbenstroth D, Dietze K, Grund C, Conraths FJ, Harder T, Beer M, Pohlmann A. Connect to Protect: Dynamics and Genetic Connections of Highly Pathogenic Avian Influenza Outbreaks in Poultry from 2016 to 2021 in Germany. *Viruses* 2022, 14, 1849. <https://doi.org/10.3390/v14091849>.

Peters M, King J, Wohlsein P, Grund C, Harder T. Genuine lethal infection of a wood pigeon (*Columba palumbus*) with high pathogenicity avian influenza H5N1, clade 2.3.4.4b, in Germany, 2022. *Vet Microbiol.* 2022; 270: 109461. doi: 10.1016/j.vetmic.2022.109461.

Pohlmann A, King J, Fusaro A, Zecchin B, Banyard AC, Brown IH, Byrne AMP, Beerens N, Liang Y, Heutink R, Harders F, James J, Reid SM, Hansen RDE, Lewis NS, Hjulsgaard C, Larsen LE, Zohari S, Anderson K, Bröjer C, Nagy A, Savič V, van Borm S, Steensels M, Briand FX, Swieton E, Smietanka K, Grund C, Beer M, Harder T. Has Epizootic Become Enzootic? Evidence for a Fundamental Change in the Infection Dynamics of Highly Pathogenic Avian Influenza in Europe, 2021. *mBio.* 2022 Aug 30;13(4):e0060922. doi: 10.1128/mbio.00609-22.

Postel A, King J, Kaiser FK, Kennedy J, Lombardo MS, Reineking W, de le Roi M, Harder T, Pohlmann A, Gerlach T, Rimmelzwaan G, Rohner S, Striwe LC, Gross S, Schick LA, Klink JC, Kramer K, Osterhaus ADME, Beer M, Baumgärtner W, Siebert U, Becher P. Infections with highly pathogenic avian influenza A virus (HPAIV) H5N8 in harbor seals at the German North Sea coast, 2021. *Emerg Microbes Infect.* 2022; 11: 725-729. doi: 10.1080/22221751.2022.2043726. PMID: 35172704

Sims L, von Dobschütz S, Pfeiffer D, Harder T, Fournier G, Bataille A, Fasina F, Martinez-Lopez B, Taylor J. Avian influenza: Information must improve effective interventions. *Empres-animal health.* 2022, 360: 5-14

Zhao N, Grund C, Beer M, Wang G, Harder TC. Tetraplex Fluorescent Microbead-Based Immunoassay for the Serodiagnosis of Newcastle Disease Virus and Avian Influenza Viruses in Poultry Sera. *Pathogens.* 2022; 11: 1059. doi: 10.3390/pathogens11091059

b) International conferences:

3

1. Bird flu workshop 18/19.10.2022
2. IABS Vaccine congress, Paris, October 25-26, 2022
3. 27. Ann. Meeting EURL 20./21.9.2022

c) National conferences:

2

1. 11. Dresdner Geflügelsymposium 14.06.2022
2. 10. Riemser Diagnostiktage 24.-25.11.2022

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

&gt;10

Public media interviews (newspaper, online media, broadcasting) national (8) and international (3).

## TOR7: SCIENTIFIC AND TECHNICAL TRAINING

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOA H 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		Akkreditierungsurkunde_2022.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
All diagnostic measures (virological, molecular, serological)	DAKKS

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

Yes

## TOR9: SCIENTIFIC MEETINGS

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

No

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

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
IABS Vaccine meeting	2022-10-25	Paris, WOA	Scientific board member	Keynote on surveillance of AIV in vaccinated populations

## TOR10: NETWORK WITH WOA REFERENCE LABORATORIES

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

Yes

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

Yes

PURPOSE OF THE PROFICIENCY TESTS: 1	ROLE OF YOUR REFERENCE LABORATORY (ORGANISER/ PARTICIPANT)	NO. PARTICIPANTS	PARTICIPATING WOA REF. LABS/ ORGANISING WOA REF. LAB.
Diagnostic sensitivity	Participant		Various

25. Did you organise or participate in inter-laboratory proficiency tests with WOA Reference Laboratories designated for the same pathogen?

Yes

PURPOSE OF THE PROFICIENCY TESTS: 1	ROLE OF YOUR REFERENCE LABORATORY (ORGANISER/ PARTICIPANT)	NO. PARTICIPANTS	PARTICIPATING WOA REF. LABS/ ORGANISING WOA REF. LAB.
Diagnostic performance, organized by EURL, Padova, Italy	Participant	>40	Various
Diagnostic performance, organized by OFFLU/CSIRO, Geelong, Australia	Participant	15	Various
Diagnostic performance, organized by APHA, Weybridge, UK	Participant	>40	Various
Diagnostic performance, National PT, Germany	Organizer	>35	0 (national level)

26. Did your laboratory collaborate with other WOA 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 WOA REFERENCE LABORATORIES
Diagnostic tools	Validating RT-qPCRs	EURL-Padova, Italy

## TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

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

Yes

Purpose for inter-laboratory test comparisons <sup>1</sup>	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Region(s) of participating WOA Member Countries
Diagnostic performance, organized by GD Deventer, Netherlands	Participant	40	Europe MiddleEast

## TOR12: EXPERT CONSULTANTS

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

No

29. Additional comments regarding your report:

Yes

*The laboratory was under high pressure due to its parallel function as the national German reference laboratory. Several thousand cases in wild birds and hundreds of poultry outbreaks had to be handled.*