

WOAH Reference Laboratory Reports Activities 2022

Activities in 2022

This report has been submitted : 26 avril 2023 11:59

Laboratory Information

Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:	Classical swine fever
Address of laboratory:	Buenteweg 17, 30559 Hannover, Germany
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E-mail address:	paul.becher@tiho-hannover.de
Website:	https://www.tiho-hannover.de/kliniken-institute/institute/institut-fuer-virologie/eu-and-woah-reference-laboratory
Name (including Title) of Head of Laboratory (Responsible Official):	Prof. Dr. Paul Becher , Director
Name (including Title and Position) of WOAH Reference Expert:	Prof. Dr. Paul Becher
Which of the following defines your laboratory? Check all that apply:	Academic institution

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
Comparative neutralising peroxidase-linked assay (antibodies against CSFV and BDV/ BVDV for discriminating	yes	0	12

serology testing)			
Enzyme-linked immunosorbent assay (antibodies against CSFV)	yes	0	0
Direct diagnostic tests		Nationally	Internationally
Virus isolation (CSFV)	yes	0	0
Reverse-transcription polymerase chain reaction (CSFV/ Panpesti)	yes	6	2
Genetic Typing (CSFV phylogenetic analysis)	yes	0	0
Enzyme-linked immuosorbent assay (CSFV)	yes	0	0

TOR2: REFERENCE MATERIAL

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

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOA 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 MEMBER COUNTRIES	COUNTRY OF RECIPIENTS
Reference sera for Antibody detection techniques	Neutralising peroxidase-linked (NPLA) assay; enzyme-linked immunosorbent assay (ELISA) for antibody detection	produced & provided	0	337	15	Europe
Monoclonal antibodies (hybridoma cell-culture supernatant)	NPLA; Virus isolation	produced/ provided	0	75	8	Europe
Permissive cell line for cell-culture based techniques	NPLA; Virus isolation	produced/ provided	0	180	2	Europe
Virus reference strains/ isolates	NPLA; Virus isolation	produced/ provided	1	5	3	Europe
RNA (extracted from CSFV positive samples or RNA transcript)	Reverse-transcription polymerase chain reaction	produced/ provided	0	0,5	3	Europe

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
SWEDEN	2022-10-28	Neutralising peroxidase-linked (NPLA) assay and reverse-transcription polymerase chain reaction	0	3

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
CANADA	Virus neutralization assay – interpretation of results, viruses, sensitivity and cut-offs	Online meeting
AUSTRIA	Usage of foetal calf serum (FCS) in cell culture, testing of FCS before usage, alternatives FCS	Phone
PORTUGAL	CSFV diagnosis by CSFV RT-qPCR using particular matrixes (e.g. bone marrow)	Remote
FRANCE - WALLIS AND FUTUNA (ISLANDS)	Autoclaving instructions for the destruction of waste (inactivation of CSFV)	Remote
SWEDEN	Positive control serum for virus neutralization assay detecting antibodies against BDV	Remote

PARAGUAY	Harmonize the diagnostic techniques for Classical Swine Fever in the laboratory (e.g. participation in the CSF inter-laboratory comparison test, supply of reference material, support on any kind of questions on CSF diagnosis)	Remote
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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
DISCONTTOOLS	ongoing	Update on current knowledge on CSF situation, diagnosis and control, gap analysis	APHA, United Kingdom; USDA, Plum Island, USA Intervet International, MSD Animal Health, The Netherlands Boehringer Ingelheim Vetmedica GmbH, Germany; Friedrich-Loeffler-Institut (FLI), Greifswald – Island Riems, Germany Laboratory of Microbiology, Department of Disease Control, Faculty of Veterinary Medicine, Hokkaido University, Japan	GERMANY JAPAN THE NETHERLANDS UNITED KINGDOM UNITED STATES OF AMERICA

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:

- Country Reports on CSF Situation & Laboratory Diagnosis from EU MS and Third Countries
- CSF Wild Boar Data of EU MS and Third Countries
- EURL Classical- & African swine fever in Wild Boar Surveillance Database (developed by the Friedrich-Loeffler-Institute)

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:

- Country Reports on CSF Situation & Laboratory Diagnosis from EU MS and Third Countries
- CSF Wild Boar Data of EU MS and Third Countries
- EURL Classical- & African swine fever in Wild Boar Surveillance Database (developed by the Friedrich-Loeffler-Institute)

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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Stenberg H, Leveringhaus E, Malmsten A, Dalin A-M, Postel A, Malmberg M. Atypical porcine pestivirus - A widespread virus in the Swedish wild boar population, 2022, Transbound Emerg Dis. doi: 10.1111/tbed.14251.

Pavulraj S, Pannhorst K, Stout R W, Paulsen D B, Carossino M, Meyer D, Becher P, Chowdhury S I. A triple gene-deleted pseudorabies virus-vectored subunit PCV2b and CSFV vaccine protects pigs against PCV2b challenge and induces serum neutralizing antibody response against CSFV, 2022, Vaccines. doi: 10.3390/vaccines10020305.

Stokholm I, Fischer N, Bächlein C, Postel A, Galatius A, Kyhn L A, Thøstesen C B, Persson S, Siebert U, Olsen M T, Becher P. In the search of marine pestiviruses : first case of Phocoena pestivirus in a Belt Sea harbour porpoise, 2022, Viruses, doi: 10.3390/v14010161.

Leveringhaus E, Cagatay G N, Hardt J, Becher P, Postel A. Different impact of bovine complement regulatory protein 46 (CD46_{bov}) as a cellular receptor for members of the species Pestivirus H and Pestivirus G, 2022, Emerg Microbes Infect, doi: 10.1080/22221751.2021.2011620.

Charlier J, Barkema H W, Becher P, De Benedictis P, Hansson I, Hennig-Pauka I, La Ragione R, Larsen L E, Madoroba E, Maes D, Marín C M, Mutinelli F, Nisbet A J, Podgórska K, Vercruysse J, Vitale F, Williams D J L, Zadoks R N. Disease control tools to secure animal and public health in a densely populated world, 2022, Lancet Planet Health. doi: 10.1016/S2542-5196(22)00147-4.

b) International conferences:

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Postel A, Leveringhaus E, Cagatay G, Becher P. The role of complement regulatory protein CD46 as molecular determinant in pestiviral entry. "28th International Symposium on Hepatitis C Virus, Flaviviruses and Related Viruses". Ghent, Belgium, 06.-09.07.2022, presentation.

Su A, Fu Y, Meens J, Yang W, Meng F, Herrler G, Becher P. Infection of polarized bovine respiratory epithelial cells by bovine viral diarrhea virus. "28th International Symposium on Hepatitis C Virus, Flaviviruses and Related Viruses". Ghent, Belgium, 06.-09.07.2022, poster presentation.

Leveringhaus E, Cagatay GN, Hardt J, Becher P, Postel A. Different impact of bovine complement regulatory protein 46 (CD46_{bov}) as a cellular receptor for members of the species Pestivirus H and Pestivirus G. 31st Annual Meeting of the Society for Virology, hybrid – online and Munich, Germany, 30.03.-02.04.2022, poster presentation.

Leveringhaus E, Cagatay GN, Hardt J, Becher P, Postel A. Different impact of bovine complement regulatory protein 46 (CD46) as a cellular receptor for members of the species Pestivirus H and Pestivirus G. EPIZONE 14th Annual Meeting, Barcelona, Spain, 18.-20.05.2022, presentation.

Meyer D. Results of the Interlaboratory Comparison Test 2021-2022 - Serology Panel. Online Workshop on Laboratory Diagnosis of CSF and ASF, online, 14.-15.06.2022, presentation.

Meyer D. Results of the Interlaboratory Comparison Test 2021-2022 - Virology Panel. Online Workshop on Laboratory Diagnosis of CSF and ASF, online, 14.-15.06.2022, presentation.

Meyer D, Becher P. Report of the CSF EURL activities in 2021-2022. Online Workshop on Laboratory Diagnosis of CSF and ASF, online, 14.-15.06.2022, presentation.

c) National conferences:

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Becher P. Bedeutung und aktuelle Entwicklung von viralen Erkrankungen bei Nutztieren. „28. Hülseberger Gespräche 2022: Tiergesundheit –Resistenzen und innovative Strategien“, 31.05. – 01.06.2022, Hamburg.

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

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Information on CSF:

<https://www.tiho-hannover.de/kliniken-institute/institute/institut-fuer-virologie/eu-and-woah-reference-laboratory>

Virus database:

<https://www.tiho-hannover.de/kliniken-institute/institute/institut-fuer-virologie/eu-and-woah-reference-laboratory/databases>

Serum and tissue database:

<https://www.tiho-hannover.de/kliniken-institute/institute/institut-fuer-virologie/eu-and-woah-reference-laboratory/databases>

CSF / ASF WILD BOAR SURVEILLANCE DATABASE:

<http://public.csf-wildboar.eu>

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)	
		DAkKS Urkunde englisch_2020.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Isolation, propagation and quantification of CSFV in cell culture	DAkKS /ILAC-MRA

Detection of CSFV antigen by ELISA	DAkKS /ILAC-MRA
Detection of antibodies directed against CSFV by ELISA	DAkKS /ILAC-MRA
Detection of antibodies directed against CSFV by neutralization assay	DAkKS /ILAC-MRA
Detection of antibodies directed against Border Disease Virus (BDV) by neutralization assay	DAkKS /ILAC-MRA
Detection of antibodies directed against Bovine Viral Diarrhea Virus (BVDV) by neutralization assay	DAkKS /ILAC-MRA
Detection of CSFV genome using RT-PCR (and subsequent preparation for genotyping)	DAkKS /ILAC-MRA
Detection of CSFV genome and detection of genome of other pestiviruses using real-time RT-PCR (SYBR Green)	DAkKS /ILAC-MRA
Detection of CSFV genome using real-time RT-PCR with TaqMan probe	DAkKS /ILAC-MRA
Detection of CSFV genome using virotype CSF RT-PCR-Kit	DAkKS /ILAC-MRA
Isolation, propagation and quantification of BVDV, BDV and other pestiviruses in cell culture	DAkKS /ILAC-MRA

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

Yes

A biological risk analysis is performed by the head of the laboratory together with the management of laboratory biological risk. Biosafety and laboratory biosecurity measures are implemented and summarized in the corresponding operating instructions of the laboratory.

TOR9: SCIENTIFIC MEETINGS

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

No

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

No

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

Yes

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PURPOSE OF THE PROFICIENCY TESTS: 1	ROLE OF YOUR REFERENCE LABORATORY (ORGANISER/ PARTICIPANT)	NO. PARTICIPANTS	PARTICIPATING WOAHP REF. LABS/ ORGANISING WOAHP REF. LAB.
Validation of diagnostic protocols: Real-time RT-PCR Conventional RT-PCR Antigen ELISA, Virus isolation, Sequencing, Virus Neutralization assay Antibody ELISA	Organizer	35	participating WOAHP Ref. Labs: National Veterinary Research Institute, Pulawy, Poland; Animal Health and Veterinary Laboratories Agency, Weybridge, UK; Animal Health Research Institute (AHRI) IRTA CReSA Bellaterra (Barcelona), Spain; China Institute of Veterinary Drug Control, Beijing, China organising WOAHP Ref. Lab: University of Veterinary Medicine of Hannover, Department of Infectious Diseases, Institute of Virology, Hannover, Germany

26. Did your laboratory collaborate with other WOAHP 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 WOAHP REFERENCE LABORATORIES
Characterisation of monoclonal antibodies against Classical swine fever virus	Testing of novel monoclonal antibodies against Classical swine fever virus using different pestivirus strains (including various genotypes of CSFV)	Animal Health Research Institute, Tamsui, New Taipei City, Taiwan
Characterisation of monoclonal antibodies against pestiviruses	Testing of monoclonal antibodies using pestivirus strains that were discovered in ruminants, pigs or in non-ungulate hosts.	Animal and Plant Health Agency, Surrey, United Kingdom

TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

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

Yes

Purpose for inter-laboratory test comparisons ¹	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Region(s) of participating WOAHP Member Countries
Determining laboratory's capability to conduct specific diagnostic tests: Antigen ELISA Real-time RT-PCR Conventional RT-PCR, Sequencing Virus isolation Virus Neutralization assay Antibody ELISA	Organizer	35	Asia and Pacific Europe
Inter-laboratory comparison test for CSF-Serology organized by National Reference Laboratory for	Participant		Europe

CSF, Germany (FLI, Island of Riems)

Classical Swine Fever SEROLOGY organized by
National Reference Laboratory for CSF, France
(ANSES, Ploufragan)

Participant

Europe

TOR12: EXPERT CONSULTANTS

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

29. Additional comments regarding your report:

Yes

Based on the situation of COVID-19 no face-to-face scientific meetings and hands-on training courses for laboratory personnel from other WOA Member Countries were organized.

In addition, participation in conferences, meetings and seminars for dissemination of scientific information was preferentially performed by web-based meetings.