

# OIE Reference Laboratory Reports Activities

## *Activities in 2019*

**This report has been submitted : 2020-01-16 16:33:02**

<b>Name of disease (or topic) for which you are a designated OIE Reference Laboratory:</b>	Classical swine fever
<b>Address of laboratory:</b>	Bünteweg 17 30559 Hannover GERMANY
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<b>Name (including Title) of Head of Laboratory (Responsible Official):</b>	Prof. Dr. Paul Becher
<b>Name (including Title and Position) of OIE Reference Expert:</b>	Prof. Dr. Paul Becher, Director
<b>Which of the following defines your laboratory? Check all that apply:</b>	Academic

**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
<b>Indirect diagnostic tests</b>			
Comparative neutralising peroxidase-linked assay (antibodies against CSFV and BDV/ BVDV for discriminating serology testing)	yes	0	32
Enzyme-linked immuosorbent assay (antibodies against CSFV)	yes	0	0
<b>Direct diagnostic tests</b>			
Virus isolation (CSFV)	yes	0	0
Reverse-transcription polymerase chain reaction (CSFV/ Panpesti)	yes	73	6
Genetic Typing (CSFV phylogenetic analysis)	yes	0	21
Enzyme-linked immuosorbent assay (CSFV)	yes	0	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
Reference sera for Antibody detection techniques	Neutralising peroxidase-linked (NPLA) assay/ enzyme-linked immunosorbent assay (ELISA) for antibody detection	produced & provided	6	208	29	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americ as <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Reference sera for Virus detection techniques	Virus isolation; Reverse-transcription polymerase chain reaction	produced & provided	0	16	2	<input type="checkbox"/> Africa <input type="checkbox"/> Americ as <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Monoclonal antibodies (hybridoma cell-culture supernatant)	NPLA, Virus isolation	produced & provided	0	55	10	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americ as <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Permissive cell line for cell-culture based techniques	NPLA, Virus isolation	produced & provided	0	480	6	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americ as <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Virus reference strains/ isolates	NPLA, Virus isolation	produced & provided	0	15	13	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americ as <input 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?

Yes

Name of OIE Member Country seeking assistance	Date (month)	No. samples received for provision of diagnostic support	No. samples received for provision of confirmatory diagnoses
LUXEMBOURG	January	0	2
BELGIUM	February	0	13

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
NORWAY	Control serum for ELISA	remote
GREECE	Protocol for automatically RNA isolation	remote
UNITED KINGDOM	Control material for RNA extraction	remote
PERU	Monoclonal antibody used for CSF detection (NPLA)	remote
CHINA (PEOPLE'S REP. OF)	Application of Erns specific antibody ELISAs in combination with E2 based vaccines	remote
BRAZIL	CSFV Genotyping	remote
SWITZERLAND	Monoclonal antibody used for CSF detection (Virus isolation)	remote
CANADA	Interpretation of results obtained for NPLA (differential diagnosis)	Phone call
MALTA	Reference sera for quality control/ verification of CSFV antibody ELISAs	remote
CHINESE TAIPEI	Consultation to stop vaccination against CSF	de loco

***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
DISCONTOOLS	2016	Update on current knowledge on CSF situation, diagnosis and control, gap analysis	The Swedish University of Agricultural Sciences, Uppsala, Sweden; DTU National Veterinary Institute, Denmark; APHA, United Kingdom; Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Perugia, Italy; Wageningen Bioveterinary Research, Lelystad, The Netherlands; Centro de Investigación en Sanidad Animal, INIA-CISA, Valdeolmos, Spain; CODA-CERVA, Ukkel, Belgium ANSES, France Canadian Food Inspection Agency, Canada; DTU Vet, Lindholm, Denmark; Business Economics Group, Wageningen University, The Netherlands IDEXX Technologies GmbH, Switzerland; Friedrich-Loeffler-Institut (FLI), Greifswald - Island Riems, Germany The National Veterinary Institute (SVA), Sweden; National Institute of Animal Health, NARO, Japan	BELGIUM CANADA DENMARK GERMANY ITALY JAPAN SPAIN SWEDEN SWITZERLAND THE NETHERLANDS UNITED KINGDOM

***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:

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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:

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**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: 4

Isken O, Postel A, Bruhn B, Lattwein E, Becher P, Tautz N. CRISPR/Cas9-Mediated Knockout of DNAJC14 Verifies This Chaperone as a Pivotal Host Factor for RNA Replication of Pestiviruses. *J Virol*. 2019 Feb 19;93(5). pii: e01714-18. doi: 10.1128/JVI.01714-18.

Postel A, Nishi T, Kameyama KI, Meyer D, Suckstorff O, Fukai K, Becher P. Reemergence of Classical Swine Fever, Japan, 2018. *Emerg Infect Dis*. 2019 Jun;25(6):1228-1231. doi: 10.3201/eid2506.181578. Epub 2019 Jun 17.

Cagatay GN, Meyer D, Wendt M, Becher P, Postel A. Characterization of the Humoral Immune Response Induced after Infection with Atypical Porcine Pestivirus (APPV). *Viruses*. 2019 Sep 21;11(10). pii: E880. doi: 10.3390/v11100880.

Meyer D, Petrov A, Becher P. Inactivation of Classical Swine Fever Virus in Porcine Serum Samples Intended for Antibody Detection. *Pathogens*. 2019 Dec 5;8(4). pii: E286. doi: 10.3390/pathogens8040286.

b) International conferences: 11

Becher P. Report of the CSF EURL activities - Part 1. Workshop on Laboratory Diagnosis and Control of CSF and ASF 2019, Madrid, 17.06-18.06.2019.

Becher P. Inactivation of CSFV in serum samples. Seminar at Chinese Institute of Veterinary Drug control, Beijing, China, October 23, 2019.

Becher P. Characterization, diagnosis and control of Classical swine fever virus and related viruses. International Symposium for Classical swine fever, Beijing, China, October 23-25, 2019.

Becher P. Epidemiology, diagnosis and control of Classical swine fever virus and related viruses. Experience exchange on prevention techniques and training course of diagnosis of classical swine, New Taipei City, Taiwan, 19.11.2019.

Cagatay GN, Postel A, Meyer D, Wendt M, Becher P. "Global distribution, course of infection and host immune response of atypical porcine pestivirus causing congenital tremor". Keystone Symposia on Positive-strand RNA viruses, Killarney, Ireland, 09.06-13.06.2019.

Meyer D. Results of the Interlaboratory Comparison Test 2018 - Serology and Virus Isolation Panel. Workshop on Laboratory Diagnosis and Control of CSF and ASF 2019, Madrid, 17.06-18.06.2019.

Postel A. Report of the CSF EURL activities - Part 2. Workshop on Laboratory Diagnosis and Control of CSF and ASF 2019, Madrid, 17.06-18.06.2019.

Postel A. "How research can support efforts in CSF control.", Seminar at Chinese Institute of Veterinary Drug control, Beijing, China, 23.10.2019.

Postel A. "Novel Chimeric Marker Vaccine Candidates Against Classical Swine Fever Virus.", Experience exchange on prevention techniques and training course of diagnosis of classical swine, New Taipei City, Taiwan, 19.11.2019.

Wiedemann A. Results of the Interlaboratory Comparison Test, 2018- Virology Panel. Workshop on Laboratory Diagnosis and Control of CSF and ASF 2019, Madrid, 17.06-18.06.2019.

c) National conferences: 2

Cagatay GN, Meyer D, Wendt M, Becher P, Postel A. "Characterization of the Humoral Immune Response Induced after Infection with Atypical Porcine Pestivirus (APPV)" 29th Annual Meeting of the Society for Virology, Düsseldorf, Germany, 20.03-23.03.2019.

Postel A, Becher P. "Novel chimeric marker vaccine candidates against classical swine fever virus provide full protection and improved differentiation of infected from vaccinated animals". 29th Annual Meeting of the Society for Virology, Düsseldorf, Germany, 20.03-23.03.2019.

d) Other:

(Provide website address or link to appropriate information) 4

CSFV information (e.g. diagnostic manual)

<http://www.tiho-hannover.de/kliniken-institute/institute/institut-fuer-virologie-zentrum-fuer-infektionsmedizin/eu-and-oie-reference-laboratory/downloads/>

## Virus Database

<http://www.tiho-hannover.de/kliniken-institute/institute/institut-fuer-virologie-zentrum-fuer-infektionsmedizin/eu-and-oie-reference-laboratory/databases/csf-virus-database/>

## Serum and tissue sample database

<http://www.tiho-hannover.de/kliniken-institute/institute/institut-fuer-virologie-zentrum-fuer-infektionsmedizin/eu-and-oie-reference-laboratory/databases>

## EU Reference Laboratory CSF / ASF WILD BOAR SURVEILLANCE DATABASE

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

**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: 0
- 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	Sweden	2

**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 17025:2005 (flexible scope)	Ceriticate DAkKS_D-PL-13261-02-00.pdf

16. 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 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
Detection of ASFV genome using virotype ASF PCR Kit	DAkKS /ILAC-MRA
Detection of ASF genome using real-time PCR with TaqMan probe	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
Isolation, propagation and quantification of BVDV, BDV and other pestiviruses in cell culture	DAkKS /ILAC-MRA

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?

Yes

National/ International	Title of event	Co-organiser	Date (mm/yy)	Location	No. Participants
International	“Workshop on Laboratory Diagnosis and Control of CSF and ASF	DG-SANTE; CISA- INIA, Spain	06/2019	Madrid, Spain	72

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

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
Workshop on Laboratory Diagnosis and Control of CSF and ASF	06/2019	Madrid, Spain	speaker	Results of the Interlaboratory Comparison Test 2018 - Serology and Virus Isolation Panel
Workshop on Laboratory Diagnosis and Control of CSF and ASF	06/2019	Madrid, Spain	speaker	Results of the Interlaboratory Comparison Test, 2018- Virology Panel
Workshop on Laboratory Diagnosis and Control of CSF and ASF	06/2019	Madrid, Spain	speaker	Report of the CSF EURL activities
Seminar at Chinese Institute of Veterinary Drug control	10/2019	Beijing, China	speaker	How research can support efforts in CSF control
Seminar at Chinese Institute of Veterinary Drug control	10/2019	Beijing, China	speaker	Inactivation of CSFV in serum samples
International Classical swine fever conference 2019	10/2019	Beijing, China	speaker	Novel Chimeric Marker Vaccine Candidates Against Classical Swine Fever Virus
International Classical swine fever conference 2019	10/2019	Beijing, China	speaker	Characterization, diagnosis and control of Classical swine fever virus and related viruses
Experience exchange on prevention techniques and training course of diagnosis of classical swine	11/2019	New Taipeh City, Taiwan	speaker	Novel Chimeric Marker Vaccine Candidates Against Classical Swine Fever Virus
Experience exchange on prevention techniques and training course of diagnosis of classical swine	11/2019	New Taipeh City, Taiwan	speaker	Epidemiology, diagnosis and control of Classical swine fever virus and related viruses.
Keystone Symposia on Positive-strand RNA viruses	06/2019	Killarney, Ireland	Poster	Global distribution, course of infection and host immune response of atypical porcine pestivirus causing congenital tremor
29th Annual Meeting of the Society for Virology	03/2019	Düsseldorf, Germany	Poster	Characterization of the Humoral Immune Response Induced after Infection with Atypical Porcine Pestivirus (APPV)

29th Annual Meeting of the Society for Virology	03/2019	Düsseldorf, Germany	Poster	Novel chimeric marker vaccine candidates against classical swine fever virus provide full protection and improved differentiation of infected from vaccinated animals
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**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: <sup>1</sup>	Role of your Reference Laboratory (organiser/ participant)	No. participants	Participating OIE Ref. Labs/ organising OIE Ref. Lab.
Validation of diagnostic protocols: Real-time RT-PCR Conventional RT-PCR Antigen ELISA, Virus isolation, Sequencing, Virus Neutralization assay Antibody ELISA	organiser	43	participating OIE Ref. Labs: National Veterinary Research Institute, Pulawy, Poland; Animal Health and Veterinary Laboratories Agency, Weybridge, UK; Animal Health Research Institute (AHRI) Division of Hog Cholera New Taipei City, Taiwan; IRTA CReSA Bellaterra (Barcelona), Spain organising OIE Ref. Lab: University of Veterinary Medicine of Hannover, Department of Infectious Diseases, Institute of Virology, Hannover, Germany

<sup>1</sup> 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
Phylogenetic analysis of CSFV isolates of the current CSF outbreak in Japan	Molecular screening of sample material from the current CSF outbreak in Japan	Institute of Animal Health National Agriculture and Food Research Organization, Tokyo, Japan
Epidemiological Research on CSFV	Molecular screening of sample material from current CSFV outbreaks in Peru during the years 2015-2017	Unidad Centro de Diagnóstico de Sanidad Animal, Lima, Peru
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

**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 <sup>1</sup>	No. participating laboratories	Region(s) of participating OIE Member Countries
Organizer: 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	43	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Participant Determining laboratory's capability to conduct specific diagnostic test; CSF RT-PCR organized by National Reference Laboratory for CSF, France (ANSES, Ploufragan)	13	<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?

No

25. Additional comments regarding your report: