

# WOAH Reference Laboratory Reports Activities 2023

## Activities in 2023

This report has been submitted : 12 juin 2024 09:27

### Laboratory Information

<b>Name of disease (or topic) for which you are a designated WOAHO Reference Laboratory:</b>	Foot and Mouth Disease
<b>Address of laboratory:</b>	177 Hyuksin 8-ro, Gimcheon-si, Gyeongsangbukdo
<b>Tel.:</b>	+82549120774
<b>E-mail address:</b>	virusmania@korea.kr
<b>Website:</b>	www.qia.go.kr
<b>Name (including Title) of Head of Laboratory (Responsible Official):</b>	Jung-hee Kim, Commissioner of APQA
<b>Name (including Title and Position) of WOAHO Reference Expert:</b>	Dr Sang-Ho Cha, Head of FMD Reference Laboratory
<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 WOAHO Manual (Yes/No)	Total number of test performed last year	
		Nationally	Internationally
<b>Indirect diagnostic tests</b>			
ELISA (SP Antibody)		743228	0
ELISA (NSP Antibody)		743210	0
<b>Direct diagnostic tests</b>			
Virus isolation		9	0
Antigen ELISA		0	0
Realtime RT-PCR		1317	0
VP1 gene sequencing		9	0
Phylogenetic analyses		9	0

### TOR2: REFERENCE MATERIAL

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

No

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

Yes

TYPE OF REAGENT AVAILABLE	RELATED DIAGNOSTIC TEST	PRODUCED/ PROVIDE	AMOUNT SUPPLIED NATIONALLY (ML, MG)	AMOUNT SUPPLIED INTERNATIONALLY (ML, MG)	NO. OF RECIPIENT WOAHO MEMBER COUNTRIES	COUNTRY OF RECIPIENTS
FMDV 3Diff/PAN Rapid		Median				

kit	FMDV Rapid test	Diagnosis/APQA	tests	20 tests	2	MALAYSIA, SRI LANKA,
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4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAHP Members?

No

### TOR3: NEW PROCEDURES

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

Yes

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

Yes

NAME OF THE NEW TEST OR DIAGNOSTIC METHOD DEVELOPED	DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)
FMDV PAN 3Ty Dx/DDx direct qRT-PCR	Direct rRT-PCR system for diagnosis of FMDV, SVD, SVV, and differentiation of FMDV serotypes O, A, and Asia1; manuscript in preparation. For data requests, please contact the expert.
FMDV 3Diff/PAN Ag Rapid Kit	Lateral flow test for FMD <a href="https://www.woah.org/en/what-we-offer/veterinary-products/diagnostic-kits/the-register-of-diagnostic-kits/">https://www.woah.org/en/what-we-offer/veterinary-products/diagnostic-kits/the-register-of-diagnostic-kits/</a>

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?

No

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
Comparative studies for AI and FMD virus between Korea and Vietnam	10 years(2014-2024)	Studies on genetic characterization of FMDV and AIV in Vietnam	NCVD (National Center for Veterinary Diagnosis)	VIETNAM
Comparative studies for avian influenza virus and FMD virus between Korea and Cambodia	5 years(2023-2027)	Studies on genetic characterization of FMDV and AIV in Cambodia	NAHPRI (National Animal Health and Production Research Institute)	CAMBODIA
Comparative studies for avian influenza virus and FMD virus between Korea and LAO PDR	5 years(2023-2027)	Studies on genetic characterization of FMDV and AIV in LAO PDR	NAHL (National Animal Health Laboratory)	LAOS
Comparative studies for FMD virus between Korea and Bangladesh	5 years(2020-2024)	Studies on genetic characterization of FMDV in Bangladesh	CDIL(Central Disease Investigation Laboratory)	BANGLADESH

13. In exercising your activities, have you identified any regulatory research needs\* relevant for WOAHP?

Yes

**Research need : 1**

**Please type the Research need:** Application Point of Care Molecular test (real-time RT-PCR)

**Relevance for WOA**H Disease Control,

**Relevance for the Codes or Manual** Manual,

**Field** Diagnostics,

**Animal Category** Terrestrial,

**Disease:**

Foot and mouth disease

**Kind of disease (Zoonosis, Transboundary diseases)** Transboundary diseases,

**If any, please specify relevance for Codes or Manual, chapter and title**

(e.g. Terrestrial Manual Chapter 2.3.5 - Minimum requirements for aseptic production in vaccine manufacture)

**Answer:** Terrestrial Manual Chapter 3.1.8. - Nucleic acid recognition methods

**Notes:**

**Answer:**

**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:

Epidemiological data(sampling time, location and species) relating to the samples received for scientific research (see ToR 5) was collected

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:

sampling time, location and species

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:

2

1. *On-Site Remote Monitoring System with NIR Signal-Based Detection of Infectious Disease Virus in Opaque Salivary Samples*  
*ACS Sens.* 2023 Mar 24;8(3):1299-1307. doi: 10.1021/acssensors.2c02818. Epub 2023 Feb 14.

2. *Serological survey of foot and mouth disease virus structural protein at cattle breeding farms in the Republic of Korea, 2020~2021*  
*J.Prev.Vet.Med* Vol 47, No 1: 19~23, March 2023

b) International conferences:

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1. *Development and Validation of a Field-Applicable CMOS Image Sensor-Based Multi-Well Real-Time Reverse Transcription PCR System for Rapid and Accurate Detection and Serotyping of Foot-and-Mouth Disease Virus (Ryoo S et al., GFRA 2023 scientific meeting)*

2. *Phylogenetic and genotypic characteristics of the Foot-and-Mouth Disease Virus from outbreaks in South Korea, 2023 (Kang H et al., GFRA 2023 scientific meeting)*

3. *Phylogenetic analysis of Foot-and-mouth disease viruses circulating in Vietnam in 2022 (Uom TY, et al., GFRA 2023 scientific meeting)*

4. *Identification of Foot-and-mouth disease virus(FMDV) genotype circulating in Bangladesh, 2022 (Kang H et al., GFRA 2023 scientific meeting)*

5. Comparison of VP1 sequences between samples transfected with FMDV and clinical samples (Jo E et al., GFRA 2023 scientific meeting)
6. Genotypic identification of Foot and mouth disease virus isolated from Cambodia between 2018-2022 (Lim DR1, GFRA 2023 scientific meeting)
7. Operation and Utilization of a Foot-and-Mouth Disease Serum Bank as a National Reference Laboratory for Foot-and-Mouth Disease Diagnosis in South Korea (Kim TW et al., GFRA 2023 scientific meeting)
8. Serological analysis of structural protein antibodies to foot-and-mouth disease virus type O in the outbreak and the other regions from 2021 to August 2023 (Seo HJ et al., 2023 KSVS)
9. Comparative analysis of FMDV structural protein seropositivities in pigs tested by private and public veterinary diagnostic laboratories (Noh J et al., 2023 KSVS)
10. Recent proficiency test results of antibody diagnostics for Foot-and-Mouth Disease in veterinary service laboratories in Korea (Lee G et al., 2023 KSVS)
11. Serological survey of foot-and-mouth disease virus type O at cattle breeding farms in 2022 (Han YJ et al., 2023 KSVS)
12. Age-specific vaccine-induced immunity against foot-and-mouth disease virus in cattle (Choi EJ et al., 2023 KSVS)
13. Serological immune responses against foot-and-mouth disease virus in pigs and cattle at areas near the border to North Korea (Lee G et al., 2023 KSVS)

c) National conferences:

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

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Monthly National sero-surveillance results for overall population immunity and prevalence of infection surveillance (in Korean, [www.qia.go.kr](http://www.qia.go.kr))

## TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

a) Technical visit : 0

b) Seminars : 11

c) Hands-on training courses: 11

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
B	MALAYSIA	2
B	VIETNAM	3
B	KAZAKHSTAN	2
B	PHILIPPINES	3
B	SRI LANKA	2
C	MALAYSIA	2
C	VIETNAM	3
C	KAZAKHSTAN	2
C	PHILIPPINES	3
C	SRI LANKA	2

## TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
KS Q ISO/IEC 17025	pdf	20220901_KT372_APQA 17025.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Antigen detection(Realtime RT-PCR, RT-PCR, Antigen ELISA)	KOLAS(Korean Laboratory Accrediation)
Antibody detection(SP ELISA, NSP ELISA)	KOLAS(Korean Laboratory Accrediation)

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 WOAHP?

No

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

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
WOAH/FAO Reference Laboratory Network Annual Meeting	2023-10-09	Canada	Speaker	FMD-related activities in 2023 of Animal and Plant Quarantine Agency

## TOR10: NETWORK WITH WOAHP REFERENCE LABORATORIES

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

Yes

24. Do you network (collaborate or share information) with other WOAHP Reference Laboratories designated for the same pathogen?

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOAHP REF. LABS
WOAH/FMD Reference Laboratory Network/FMD	Participant	20	Further details: <a href="http://www.foot-and-mouth.org">www.foot-and-mouth.org</a>

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

Yes

PURPOSE OF THE PROFICIENCY TESTS: 1	ROLE OF YOUR REFERENCE LABORATORY (ORGANISER/ PARTICIPANT)	NO. PARTICIPANTS	PARTICIPATING WOAHP REF. LABS/ ORGANISING WOAHP REF. LAB.
FMD diagnostics methods(virology and serology)	Participant	unknown	unknown

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?

No

## 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-	Role of your reference			

laboratory test comparisons <sup>1</sup>	laboratory (organizer/participant)	No. participating laboratories	Name of the Test	WOAH Member Countries
National Proficiency test for Diagnosis of FMD	Organizer	46	FMD Proficiency Testing	KOREA (REP. OF),

## TOR12: EXPERT CONSULTANTS

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

No

29. Additional comments regarding your report:

No