

# OIE Reference Laboratory Reports Activities

## *Activities in 2019*

**This report has been submitted : 2020-01-10 05:54:00**

<b>Name of disease (or topic) for which you are a designated OIE Reference Laboratory:</b>	Foot and mouth disease
<b>Address of laboratory:</b>	Regional Reference Laboratory for FMD in South East Asia National Institute of Animal Health Department of Livestock development Pakchong Nakhonratchasima 30130 THAILAND
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<b>Name (including Title) of Head of Laboratory (Responsible Official):</b>	Dr. Romphruke Udon, Acting Head, Regional Reference Laboratory for FMD in South East Asia
<b>Name (including Title and Position) of OIE Reference Expert:</b>	Dr. Wilai Linchongsubongkoch OIE Expert and Consultant of Department of Livestock Development (DLD) on foot and mouth disease
<b>Which of the following defines your laboratory? Check all that apply:</b>	Governmental

**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
Indirect diagnostic tests		Nationally	Internationally
Liquid phase blocking ELISA (LP ELISA)	Yes	8,835	-
ELISA-non structural protein antibody (NSP)	Yes	3,247	-
Vaccine matching (r-value) by LP ELISA	Yes	40	-
Direct diagnostic tests		Nationally	Internationally
Antigen capture ELISA (ELISA typing)	Yes	450	-
Virus isolation	Yes	431	-
qRT-PCR (3D segment)	Yes	426	-
Multiplex RT-PCR	Yes	450	-
VP1 Sequencing	Yes	73	-

**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
Rabbit rapping antibody for FMDV type O	-LP ELISA - ELISA typing - Vaccine matching	Produced and provided	6.6 ml	-	-	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Rabbit rapping antibody for FMDV type A	-LP ELISA - ELISA typing - Vaccine matching	Produced and provided	8.6 ml	-	-	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Rabbit rapping antibody for FMDV type Asia1	-LP ELISA - ELISA typing - Vaccine matching	Produced and provided	5.4 ml	-	-	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Guinea pig detecting antibody for FMDV type O	-LP ELISA - ELISA typing - Vaccine matching	Produced and provided	12.5 ml	-	-	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Guinea pig detecting antibody for FMDV type A	-LP ELISA - ELISA typing - Vaccine matching	Produced and provided	17 ml	-	-	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Guinea pig detecting antibody for FMDV type Asia1	-LP ELISA - ELISA typing - Vaccine matching	Produced and provided	10.5 ml	-	-	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East

Concentrated and inactivated antigen type O	-LP ELISA - ELISA typing - Vaccine matching	Produced and provided	52 ml	-	-	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Concentrated and inactivated antigen type A	-LP ELISA - ELISA typing - Vaccine matching	Produced and provided	55 ml	-	-	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Concentrated and inactivated antigen type Asia1	-LP ELISA - ELISA typing - Vaccine matching	Produced and provided	62 ml	-	-	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Strong positive serum (C++)	LP ELISA	Produced and provided	245 ml	-	-	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Weak positive serum (C+)	LP ELISA	Produced and provided	200 ml	-	-	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Negative serum (C-)	LP ELISA	Produced and provided	135 ml	-	-	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East

Laboratory control serum for positive	NSP-ELISA	Produced and provided	7	-	-	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Laboratory control serum for negative	NSP-ELISA	Produced and provided	7	-	-	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input 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?

No

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
MYANMAR	Training on early detection and typing of foot and mouth disease (FMD)	Lecture and laboratory practice on ELISA typing, virus isolation and real time RT-PCR
CAMBODIA	Training on early detection and typing of foot and mouth disease (FMD)	Lecture and laboratory practice on ELISA typing, virus isolation and real time RT-PCR
LAOS	Training on early detection and typing of foot and mouth disease (FMD)	Lecture and laboratory practice on ELISA typing, virus isolation and real time RT-PCR
VIETNAM	Training on early detection and typing of foot and mouth disease (FMD)	Lecture and laboratory practice on ELISA typing, virus isolation and real time RT-PCR

***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
FMDV complete genome sequencing (continued)	3 years	To enhance the molecular epidemiological analysis	National Institute of Animal Health (NIAH) Japan	JAPAN
Research collaboration on development of FMDV molecular techniques	4 years	To develop FMDV genotyping using real time RT-PCR and application of Next Generation for genome sequencing	Australian Animal Health Laboratory (AAHL)	AUSTRALIA

***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:
1) Collected the diagnostic results, surveillance information, strain characterisation information sent to the OIE-SRR Office in the region for updating FMDV information. 2) Organised the Bi-lateral Meeting between Reference lab , Bureau of Disease Control (BDC) Thailand and OIE-SRR for technical discussion, trouble shooting related topics.

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:
1)Sharing the information of FMDV situation, antigenic and genomic variation information to the Bureau of Disease Control, DLD and OIE-SRR and provided recommendation and consultant in case of new strain occurred in the region and to select an appropriate vaccine strain in FMDV controlling.

**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: 6

- 1) Linchongsubongkoch,W. Final reviewed the Scientific paper for publication in OIE Scientific journal entitled: Foot and mouth disease virus serological study of dromedary camels in Oman. M.H.H. Body, N.Y.A. Al-Senaïdi, A.H.A. Al-Subhi, M.G. Al-Maawali, M.S. Ahmed and M.H. Hussain
- 2) Linchongsubongkoch,W.2019. Protocol sample submission to Regional Reference Laboratory for FMD in South East Asia via International Airline.Journal of Veterinary Biologics :28(1) 49-55.
- 3)Linchongsubongkoch,W. 2019. Evaluation of various types of non structural protein kit to differentiate between vaccinated and infected animals with foot and mouth disease virus.(submitted to the Journal of Veterinary Biologics and now on the process approval)
- 4)Linchongsubongkoch,W., Suanpat,K., Samanit,J.and Deepang,C. 2019. Comparative sensitivity of fetal goat tongue ZZ-R127 cell line and primary lamb kidney cell for isolation of foot and mouth disease virus.(submitted to the Journal of Veterinary Biologics and now on the process approval).
- 5)Boonsuya Seeyo, K.2019. Epidemiology of foot and mouth disease virus serotype A in Thailand during 10 years. Proceedings in the 43th International Conference Veterinaty Science. 6-8 March, Bangkok, Thailand
- 6) Choonasard, A. 2019. Update on diagnostic tools of FMD in Thailand: Prctical approach. Proceedings in the 43th International Conference Veterinaty Science.6-8 March,Bangkok, Thailand

b) International conferences: 9

- 1)Linchongsubongkoch, W. Participating in the 2nd Regional Meeting for OIE Reference Centers for Asia and the Pacific, 12-13 March 2019, Tokyo, Japan.
- 2)Augvanichbun,S. Participating in the 22 nd SEACFMD national Coordinators Meeting, 25-27 June 2019, Ulaanbaatar, Mongolia.
- 3)Udon, R. Participated on the Veterinary Diagnosis Laboratory Network Coordination Meeting with Directors of African and Asian Veterinary Laboratories, supported by FAO/IAEA,19-23 August 2019, IAEA , Austria.
- 4)Linchongsubongkoch,W., Udon,R., Augvanichban, S.and Suanpat, K. Participating in the 1st OIE/FAO Regional Expert Group Meeting on Foot and Mouth Disease, Organized by FAO-RAP and OIE-SRR, 14-16 May 2019, Bangkok, Thailand.
- 5)Udon, R., Boonsuya Seeyo,K., Augvanichban,S., Suanpat,K. Participating in the 2nd OIE/FAO Regional Expert Group Meeting on Foot and Mouth Disease, Organized by FAO-RAP and OIE-SRR,31October -1 November 2019, Bangkok,Thailand.
- 6)Boonsuya Seeyo,K., Udon,R. and Augvanichban,S. Participating on Global Foot and Mouth Disease Research Alliance (GFRA) Scientific Meeting , 29- 31 October 2019 , Bangkok, Thailand,
- 7)Udon,R., Augvanichban,S., Boonsuya Seeyo,K., Choonasard,A. and Suanpat, K. Participated in the 12th SEACFMD Laboratory Network Meeting and Regional Training on FMD sample Packing and transport, Organized by



OIE SRR, 4-6 November 2019, Pakchong, Thailand.

8) Udon, R. Participated on the 11th Regional Technical Advisory Group (Lab-TAG) Meeting and the 7th Meeting of the ASEAN Laboratory Directors (ALDF), Organized by FAO, 18-22 November 2019, Da Nang, Vietnam.

9) Linchongsubongkoch, W., Udon, R. and Augvanichbun, S. Participating in the 14th OIE/FAO FMD Reference Laboratory Network Meeting, Animal and Plant Quarantine Agency (APQA), 3-5 December 2019, Busan, South Korea

c) National conferences: 3

1) Augvanichban, S. Participating in the workshop of Laboratory Standards for ISO/IEC 17025, ISO 15189, ISO 15190 and ISO 17034, 13 June 2019, Bangkok, Thailand.

2) Suanpat, K. Participating in the training on Biorisk Management and Standard Regulation for ISO/IEC 17025:2017. 3 August 2019, Bangkok, Thailand.

3) Udon, R. and Augvanichban, S. Participating in the training course on Biosafety and Biosecurity. 27-28 November 2019. Prathumthani, Thailand.

d) Other:

(Provide website address or link to appropriate information) 0

**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: 3

d) Internships (>1 month): 1

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
d	Japan	1
c	Laos	1
c	Myanmar	1
c	Cambodia	1
c	Vietnam	1

**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/IEC 17025:2005	Certificate for ISO 17025.pdf
ISO 9001:2015	Certificate for ISO 9001.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Detection and typing of foot and mouth disease virus	ILAC-MRA by Bureau of Laboratory Quality Standards, Ministry of Public Health
Measurement of antibody titer to foot and mouth disease virus	ILAC-MRA by Bureau of Laboratory Quality Standards, Ministry of Public Health
Detection of antibody to 3ABC non-structure protein of foot and mouth disease virus	ILAC-MRA by Bureau of Laboratory Quality Standards, Ministry of Public Health

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	SEACFMD Laboratory Network Meeting and Regional Training on FMD Sample Packaging and Transport	OIE-SRR, Bangkok	4-6 /11/2019	Pakchong, Thailand	30

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
The 2nd Regional Meeting for OIE Reference Centers for Asia and the Pacific	03/19	Tokyo/Japan	Speaker	OIE Reference laboratory activities/ plans and way forward to support member countries
the 22 nd SEAFMD national Coordinators Meeting (NC Meeting)	06/19	Ulaanbaatar, Mongolia	Speaker	Regional Laboratory report in South East Asia
The Veterinary Diagnosis Laboratory Network Coordination Meeting with Directors of African and Asian Veterinary Laboratories	08/19	Vienna/Austrai	Speaker	OIE Reference laboratory activities in South East Asia
The 1stOIE/FAO Regional Expert Group Meeting on Foot and Mouth Disease	05/19	Bangkok/Thailand	Speaker	FMD Reference laboratories on FMD molecular diagnostics, improve of virus isolation and sample collection and submission
Global Foot and Mouth Disease Research Alliance (GFRA) Scientific Meeting	10/19	Bangkok/Thailand	Poster	Evolution antigenic and genetic characterisation of foot and mouth disease virus serotype A circulating in Thailand between 2007-2009
The 2nd OIE/FAO Regional Expert Group Meeting on Foot and Mouth Disease	10/19	Bangkok/Thailand	Speaker	Sample collection and protocol sample submission
SEACFMD Laboratory Network Meeting and Regional Training on FMD sample Packing and transport,	11/19	Pakchong/Thailand	Speaker	- Regional Reference Laboratory activities - Training of classification of infectious substances, sample packing and transport
OIE/FAO FMD Reference Laboratory Network Meeting	12/19	APQA/Busan/South Korea	Speaker	FMD situation and epidemiology in South East Asia

**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.
WRL Proficiency Testing scheme 2019: For quality assurance testing of FMD viruses and serology test of PT samples of panel 1 and 2 Panel1: FMD antigen Capture ELISA and real time RT-PCR Panel 2: FMD Serology test by LP ELISA and 3ABC NSP test	Participant	1	WRLFMD, The Pirbright Institute, UK.
Maintain the quality assurance (QA) system standard of ISO 17025:2005 by submission of a group of FMDV samples to WRL, The Pirbright Institute, UK. for diagnostic confirmation.	Participant	1	The Pirbright Institute, UK.
Inter-laboratory Comparison Testing on FMD antigen typing and serology test Round 2019	Organiser	29	- FMD national laboratories in South East Asia - FMD laboratories within Thailand - Animal Quarantine Stations , located along the Thai border (only NSP testing)

<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
South East Asia , China and Mongolia Foot and Mouth Disease (SEACFMD) Control Campaign (continued)	Laboratory capacity building for FMD diagnosis to support the SEACFMD 2020 Roadmap to meet the objective of establishment of FMD free zone or countries in the region and maintain FMD free status	OIE FMD Reference Laboratories: - WRLFMD, the Pirbright Institute, UK - LVRI, Lanzhou ,China - APQA, South Korea - NIAH,Japan - RRLFMD,Thailand -AAHL,Australia
Science and Technology Research Partnership for Sustainable Development (SATREP) ; 5 years	Acceleration of Livestock Revolution in Thailand aiming at a Kitchen of the World through Development of Novel Technologies Yielding Stable Livestock Production and Food Safety. - Rapid diagnosis using qRT-PCR, Next generation sequencing - To develop multiple diagnosis system (Bovine respiratory disease complex and vesicular diseases) - Fellowship for PhD student	- University of Miyazaki, Japan - Japan International Cooperation Agency (JICA)and NIAH,Japan - RRLFMD and Bureau of Disease Control and Prevention (BDC), Department of Livestock Development (DLD), Thailand
FMD Research Collaboration in development of molecular techniques	- Development of FMDV genotyping using qRT-PCR - Develop the application of Next Generation for whole genome sequencing - FMDV vaccine matching study in SEA by LP ELISA and VNT	- Australian Animal Health Laboratory (AAHL) -OIE-SRR, Bangkok - RRLFMD Thailand
Thailand-Japan Animal Health Research (continued)	-Research collaboration on animal diseases and FMD research between RRLFMD and NIAH Japan - Organize annual Thailand-Japan Joint Conference on Animal Health	National Institute of Animal Health (NIAH), Japan and RRLFMD Thailand

**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
-To comparison the diagnostic results of all participating laboratories in FMD diagnosis by antigen capture ELISA, Liquid phase blocking ELISA and non structure protein (NSP) test. - To determine the gaps and laboratory capability in solving of trouble shooting that might be faced to the assay system. - Provide the technical consultant and recommendation to lab technicians to be competence in assay validation and support the quality assurance system to meet the international standard in near future.	29	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Confirmation diagnostic testing of FMD samples by antigen capture ELISA and real time RT-PCR by subsequently submit a group of FMD samples to WRL, The Pirbright Institute, UK	1	<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?

Yes

Kind of consultancy	Location	Subject (facultative)
Consultant through email to OIE member country from Korea in FMD testing using a developed test kit	Thailand	Technical support and assistance on selection of suitable strain of test kit
Bilateral meeting of the OIIE SRR, RRLFMD and Bureau of Disease Control, DLD	Thailand	Technical discussion on development an advance technology for FMD diagnosis and facilitate the member country in sample submission to Reference laboratory for
Consultant through email to OIE member from Myanmar (JICA project) in providing an ELISA reagents	Thailand	Technical support and advise in using appropriate strain for serology test in Myanmar

25. Additional comments regarding your report:

None