World Organisation for Animal Health

Valery Zakharov - - RUSSIA

WOAH Reference Laboratory Reports Activities 2024

This report has been submitted: 29 janvier 2025 11:49

LABORATORY INFORMATION

***Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:**	Foot and mouth disease
***Address of laboratory:**	Yur'evets Vladimir RUSSIA
***Tel:**	+7-4922 26 06 14
***E-mail address:**	arriah@fsvps.gov.ru
Website:	www.arriah.ru
***Name (including Title) of Head of Laboratory (Responsible Official):**	Roman N. Rybin Director of Federal State-Financed Institution «Federal Centre for Animal Health» of Federal Service for Veterinary and Phytosanitary Surveillance (FGBI "ARRIAH")
***Name (including Title and Position) of WOAH Reference Expert:**	Valery Zakharov, ARRIAH expert, Doctor of Science (Veterinary Medicine), professor
***Which of the following defines your laboratory? Check all that apply:**	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 WOAH Manual (Yes/No)	Total number of test performed last year	
Indirect diagnostic tests		Nationally	Internationally
Liquid-phase blocking ELISA (LPB ELISA)	Yes	271817	624
Virus neutralization test (VNT)	Yes	3995	649
Indirect NSP-ELISA (ELISA-NSP)	Yes	95308	46

Antigenic matching in VNT	Yes	216	0
Direct diagnostic tests		Nationally	Internationally
Virus isolation in cell cultures	Yes	150	3
Indirect double sandwich ELISA	Yes	150	3
CFT	Yes	150	0
Real-time RT-PCR, 3D gene	Yes	10203	3
Real-time RT-PCR, 5'HTO gene	Yes	10203	3
RT-PCR, VP1 gene	Yes	0	3
VP1 gene sequencing	Yes	0	3

TOR2: REFERENCE MATERIAL

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

No

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

Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient WOAH Member Countries	Country of recipients
Kit for detection of FMD antibodies by ELISA	LPB ELISA	.....	995 kits	47 kits	7	BELARUS, IRAQ, JORDAN, RUSSIA, SYRIA, UGANDA, UZBEKISTAN,
Kit for FMDV antigen detection by ELISA	ELISA (Ag detection ELISA)	.....	1 kit	3 kits	3	RUSSIA, UGANDA, UZBEKISTAN,
FMD NSP-ELISA kit	NSP-ELISA	.....	219 kits	4 kits	5	IRAQ, RUSSIA, SYRIA, UGANDA, UZBEKISTAN,
FMD-real-time RT-PCR test kit	FMDV RT-PCR	.....	20 test sistems	2 test sistems	3	RUSSIA, UGANDA, UZBEKISTAN,
FMDV-type specific sera	CFT	.....	30 ml	6 ml	3	RUSSIA, UGANDA, UZBEKISTAN,

4. Did your laboratory produce vaccines?

Yes

5. Did your laboratory supply vaccines to WOAH Members?

Yes

Vaccine name	Amount supplied nationally (ml, mg)	Amount supplied nationally (ml, mg)	Name of recipient WOAH Members

Adsorbed FMD vaccine	contract	contract	AFGHANISTAN ARMENIA AZERBAIJAN BANGLADESH IRAN JORDAN KAZAKHSTAN KUWAIT KYRGYZSTAN LIBYA MOROCCO PAKISTAN RUSSIA SAUDI ARABIA SYRIA
Emulsion ARRIAH-VAC polyvalent FMD vaccine	contract	contract	IRAQ KAZAKHSTAN KOREA (REP. OF) MONGOLIA

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 WOAH Standards for the designated pathogen or disease?

Yes

Name of the new test or diagnostic method developed	Description and References (Publication, website, etc.)
Liquid phase ELISA kit for detection of FMDV SP antibodies to A/Tanzania/2013 strain	Patent of the Russian Federation No. 2 818 811 C1, 05/06/2024. // M.I. Doronin, N.N. Lugovskaya, D.V. Mikhalishin et al. / Application No. 2023120225.
Liquid phase ELISA kit for detection of FMDV SP antibodies to SAT-2/Eritrea/1998 strain	Patent of the Russian Federation No. 2 825 453 C1, 26.08.2024. // Mikhalishin D. V., Silantieva Lugovskaya N. N. et al. / Application No. 2023126282.
Liquid phase sandwich ELISA kit for detection of antibodies to FMDV O/Kenya/2017 whole virus particles	Patent of the Russian Federation No. 2 821 894 C1, 27.06.2024. // Doronin M. I., Mikhalishin D. V., Lugovskaya N. N. et al. / / Application No. 2023122389.
Liquid phase sandwich ELISA kit for detection of FMDV SP antibodies to Sat-1/Kenya/2017 strain	Patent of the Russian Federation No. 2 821 044 C1, 17.06.2024. // M.I. Doronin, N.N. Lugovskaya, D.V. Mikhalishin et al. / Application No. 2023128079.
Liquid phase ELISA kit for quantification of antibodies to FMDV Genotype O/EA3 146S component	Patent of the Russian Federation No. 2 817 382 C1, 27.06.2024. // M.I. Doronin, N.N. Lugovskaya, D.V. Mikhalishin et al. / Application No. 2023121385.
Liquid phase blocking indirect sandwich ELISA kit for detection of FMDV SP antibodies to SAT-2/VII genotype	Patent of the Russian Federation No. 2 815 531, 18.03.2024. // A.V. Borisov, M.I. Doronin, D.V. Mikhalishin et al. / Application No. 2023113740.
Liquid phase blocking indirect sandwich ELISA kit for detection of FMDV SP antibodies to O/2212/Primorsky/2014 strain of O/SEA/Mya-98 genotype	Patent of the Russian Federation No. 2 815 540 C1, 18.03.2024. // N.N. Lugovskaya, M.I. Doronin, D.V. Mikhalishin et al. / Application No. 2023112450.
Liquid phase blocking indirect sandwich ELISA kit for titration of antibodies to O/2356/Pakistan/2018 strain of O/ME-SA/PanAsia2ATN-10 genotype in animal sera	Patent of the Russian Federation No. 2 812 210 C1 25.01.2024. // N.N. Lugovskaya, M.I. Doronin, D.V. Mikhalishin et al. / Application No. 2023108557.
Liquid phase blocking indirect sandwich ELISA kit for detection of FMDV SP antibodies to Asia-1/ 2356/14/2018 strain in animal sera	Patent of the Russian Federation No. 2 812 211 C1, 25.01.2024. // T.V. Okovytaya, A.V. Borisov, Y.M. Gochmuradov and others/ Application No. 2023117627.
Liquid phase ELISA kit for titration of antibodies to 146S particles of FMDV SAT-2/IV genotype	RF Patent No. 2 811 996 C1, 22.01.2024 // Doronin M. I., Mikhalishin D. V., Lugovskaya N. N. and others / Application No. 2023120890.

Method for differentiation of genomes of FMDV serotype A production strains by Melt curve analysis of PCR products using SYBR Gold	Patent of the Russian Federation No. 2 823 777, 30.07.2024. // M.I. Doronin, D.V. Mikhalishin, A.V. Borisov et al. / Application No. 2024121768
Method of genotyping of FMDV SAT-2 vaccine strains by amplicone melt peak analysis using Eva488 dimeric acridine dye	Patent of the Russian Federation No. 2 823 753, 29.07.2024. // M.I. Doronin, D.V. Mikhalishin, A.V. Borisov et al. /Application No. 2023122387.

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

Yes

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

Yes

Name of the new vaccine developed	Description and References (Publication, website, etc)
Culture inactivated adsorbed vaccine against FMD SAT-2/IV	Patent of the Russian Federation No. 2 815 541, 18.03.2024. // T.V. Okovytaya, M.I. Doronin, E.A. Razgulyaeva et al./ Application No. 2023112453.
Culture inactivated adsorbed vaccine against FMD SAT-2/XIV	Patent of the Russian Federation No. 2 824 660, 12.08.2024. // M.I. Doronin, Y.M. Gochmuradov, I.A. Chvala et al. / Application No. 2024108919.
Culture inactivated adsorbed vaccine against FMD, SAT-1/I genotype based on SAT-1/Tanzania/2012 strain	Patent of the Russian Federation No. 2 815 534, 18.03.2024 // T.V. Okovytaya, M.I. Doronin, D.V. Mikhalishin et al. / Application No. 2023106750.
Culture inactivated emulsion vaccine against FMD O/EA-3 genotype based on O/2241/Ethiopia/2011 strain	Patent of the Russian Federation No. 2 816 264, 28.03.2024. // A.V. Borisov, M.I. Doronin, S.N. Fomina, et.al./ Application No. 2023120224.
Culture inactivated emulsion vaccine against FMD O/ME-SA/Ind-2001e genotype based on O/2620/Orenburg/2021 strain	Patent of the Russian Federation No. 2 815 537, 18.03.2024. // I.A. Chvala, M.I. Doronin, D.V. Mikhalishin et al. / Application No. 2023107461
Method to extend the shelf life of FMDV 146S component used for production	RF Patent No. 2 822 160, 02.07.2024. M.I. Doronin, D.V. Mikhalishin, I.A. Chvala et al. // Application No. 2023128251.

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
UGANDA	2024-03-21	virus isolation, RT-PCR, nucleotide sequencing	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
	Analysis of causes of FMD	Recommendations on the

PAKISTAN	outbreak occurrence in Pakistan and ways of addressing the issues related to the FMD outbreaks in the region	selection of the vaccine strains and use of monovalent vaccines (immunogenicity at least 6,5 PD50)

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
Agreement on cross-border trade and TADs risk reduction between China, Mongolia and Russia	Not defined	Interactions in case of emergencies associated with dangerous animal diseases including FMD	Veterinary Service Department of the Ministry of Agriculture, PRC; Veterinary and Animal Breeding Agency, Governmental Executive Authority, Mongolia	CHINA (PEOPLE'S REP. OF) MONGOLIA
Cooperation on the prevention and control of foot and mouth disease and other transboundary animal diseases between the countries of the Caucasus, Russia and Iran (GF-TADs)	Not defined	Exchange of information on outbreaks of diseases, vaccination of aniEuropean Commission for the Control of Foot-and-Mouth Disease (EuFMD)mals	European Commission for the Control of Foot-and-Mouth Disease (EuFMD)	ARMENIA AZERBAIJAN GEORGIA IRAN TURKEY
Joint CIS measures for FMD prevention and control	a proposal has been made to extend it until 2030	-	-	ARMENIA AZERBAIJAN BELARUS KAZAKHSTAN KYRGYZSTAN MOLDOVA TAJIKISTAN TURKMENISTAN UKRAINE UZBEKISTAN

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

No

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:
- The information is collected online on the Rosselkhoznadzor website in the "Epizootic Situation" section, subsections "Russia" and Foreign Countries http://www.fsvps.ru/fsvps/ya/, http://www.fsvps.ru/fsvps/iac/foreign.html - epidemiological data are used for compilation of the annual forecasts on livestock FMD in the Russian Federation, FMD introduction

and spread risk analysis, training webinars.

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:

- The information is collected online on the Rosselkhoznadzor website in the "Epizootic Situation" section, subsections "Russia" and Foreign Countries http://www.fsvps.ru/fsvps/ya/, http://www.fsvps.ru/fsvps/iac/foreign.html
- epidemiological data are used for compilation of the annual forecasts on livestock FMD in the Russian Federation, FMD introduction and spread risk analysis, training webinars.

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:

5

1. The Presence of Two Distinct Lineages of the Foot-And-Mouth Disease Virus Type A in Russia in 2013–2014 Has Significant Implications for the Epidemiology of the Virus in the Region / V. V. Nikiforov, S. A. Noskov, A. V. Sprygin, M. A. Alhussen, A. S. Krylova, T. V. Erofeeva, S. N. Fomina, S. R. Kremenchugskaya, F. I. Korennoy, M. V. Patrushev, I. A. Chvala, T. K. Mayorova, S. V. Toshchakov //Viruses 2025, 17, 8 https://doi.org/10.3390/v17010008

2. Biological properties of FMDV A 2205/G-IV strain/M. V. Sidorovskaya, S. N. Fomina, V. V. Nikiforov [et al.] // Veterinary Medicine today, 2023. vol. 12, No. 4.-pp.331-336

3. Shcherbakov A.V. Molecular epizootology of foot-and-mouth disease (review)/A. V. Shcherbakov // Veterinary Medicine today, 2024. Vol. 13, No. 1.-pp.11-19

4. Testing of diagnostic test-kits for detection of antibodies to foot-and-mouth disease virus structural proteins using enzyme-linked immunosorbent assay for their serotype specificity/N. N. Lugovskaya, E. A. Silantieva, T. V. Okovytaya [et.al] // Veterinary Medicine today, 2024. Vol. 13, No. 1.-pp.44-56

5. Stusies of cellular and humoral immunity in gilts after immunization with FMD vaccines/ M.N. Guseva, M.I. Doronin, D.V. Mikhalishin et al. // Current Issues of Veterinary Biology. – 2024. -No.1 (61). – P. 3-9.

b) International conferences:

1

1. New insights in studies of some zoonotic pathogen reproduction in BHK-21 cells / M.N. Guseva, M.I. Doronin, M.A. Shevchenko, D.V. Mikhalishin // The International Scientific Conference "Fundamental and Applied Sciences for Medicine" on October 10, 2024 in Minsk.

c) National conferences:

0

-

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

2
1. Analysis of pig disease situation significant for commercial pig production in the Russian Federation: foot-and-mouth disease, transmissible gastroenteritis, leptospirosis, porcine cysticercosis [Text]{ : scientific edition / A. S. Oganesyan, O. N. Petrova, M. A. Shibaev} // BIO. - 2024. - No. 5. - pp. 2-9.
2. http://www.fsvps.ru/fsvps/iac

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

a) Technical visit : 3

b) Seminars : 3

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
A	KOREA (DEM. PEOPLE'S. REP. OF)	5
A	CUBA	8
A	UZBEKISTAN	1
B	PAKISTAN	90
B	LEBANON	80
B	UGANDA	50
C	RUSSIA	4
C	UGANDA	50

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO/IEC 17025-2019	CERTIFICATE PDF	Аттестат ЛДЦ.pdf
GOST R ISO 9001-2015	CERTIFICATE PDF	24г Сертиф ИСО 9001 англ. яз _pdf.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Virus isolation	National accreditation system "Federal accreditation service" (RusAccreditation)
FMDV antigen detection ELISA	National accreditation system "Federal accreditation service" (RusAccreditation)
FMDV antigen detection CFT	National accreditation system "Federal accreditation service" (RusAccreditation)
FMD antibody detection LPB ELISA	National accreditation system "Federal accreditation service" (RusAccreditation)
FMDV NSP antibody detection	National accreditation system "Federal accreditation service" (RusAccreditation)
FMDV genome RT-PCR	National accreditation system "Federal accreditation service" (RusAccreditation)

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

Yes

The laboratory complies with the biosafety standards for handling Pathogenicity group II agents that are compatible with biosafety level 3 (BSL-3)

TOR9: SCIENTIFIC MEETINGS

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

No

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

Yes

Title of event	Date	location	Role (speaker, presenting poster, short communications)	Title of the work presented
91st General Session of the World Organization for Animal Health (WOAH)	2024-05-24	Paris, France	participant	----
Regional Advisory Group (RAG) meeting on FMD and PPR for the West Eurasia Roadmap within the Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs)	2024-07-01	Baku, Azerbaijan	Speaker	"Strategy for the step-by-step creation of FMD-free zones recognized by the WOAH" "The activity of the FGBI ARRIAH as a Reference laboratory for foot-and-mouth disease in the region"
19th annual meeting of the FAO/WOAH Reference Laboratory Network on Foot-and-mouth disease	2024-09-24	Rome, Italy (online)	Speaker	Report on the activities of the WOAH Regional Reference Laboratory for Foot-and-mouth Disease (FGBI "ARRIAH") for 2024

International Scientific Conference "Fundamental and Applied Sciences for Medicine"	2024-10-09	Minsk, Republic of Belarus	Speaker	
46th Regular Meeting of the Intergovernmental Council for Cooperation in Veterinary Medicine of the CIS Member States	2024-10-21	Ashgabat The Republic of Turkmenistan	Speaker	Results of the implementation of comprehensive measures to ccontrol foot-and-mouth disease from 2022 to 2024

TOR10: NETWORK WITH WOAH REFERENCE LABORATORIES

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

Yes

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

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOAH REF. LABS
WOAH/FAO FMD Laboratory Network	PARTICIPANT	30	19th annual meeting of the FAO/WOAH Reference Laboratory Network on Foot-and-mouth disease, Rome, Italy

25. Did you organise or participate in inter-laboratory proficiency tests with WOAH Reference Laboratories designated for the same pathogen during the past 2 years?

Not applicable (Only WOAH Reference Laboratory designated for the disease)

The FGBI "ARRIAH" has not participated in the PTS for the last two years due to the lack of positive answer from WOAH Reference Laboratories for FMD concerning the provision of coded panels.

26. Did your laboratory collaborate with other WOAH 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 WOAH Reference Laboratories
Molecular epidemiology of FMD outbreaks	Exchange with FMDV genome sequences according to the Memorandum of understanding of the WOAH/FAO FMD Network	FMD WRL (Pirbright, UK)

TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAH Reference Laboratories for the same pathogen during the past 2 years?

Yes

Valery Zakharov - - RUSSIA

Purpose for inter-laboratory test comparisons1	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Name of the test	WOAH Member Countries
Specificity of the FMD diagnostic tests	ORGANIZER	10	LPB ELISA	ARMENIA, AZERBAIJAN, BELARUS, KAZAKHSTAN, KYRGYZSTAN, MOLDOVA, MONGOLIA,

TOR12: EXPERT CONSULTANTS

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

No

29. Additional comments regarding your report:

No