

WOAH Reference Laboratory Reports Activities 2023

Activities in 2023

This report has been submitted : 31 mai 2024 13:17

Laboratory Information

Name of disease (or topic) for which you are a designated WOAHO 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 WOAHO 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 WOAHO Manual (Yes/No)	Total number of test performed last year	
		Nationally	Internationally
Indirect diagnostic tests			
Liquid-phase blocking ELISA (LPB ELISA)		219958	570
Virus neutralization test (VNT)		14053	570
Indirect NSP-ELISA (ELISA-NSP)		71737	190
Antigenic matching in VNT		131	12
Direct diagnostic tests			
Virus isolation in cell cultures		474	15
Indirect double sandwich ELISA		474	5
CFT		474	0
Real-time RT-PCR, 3D gene		1929	20
Real-time RT-PCR, 5'HTO gene		1929	20
RT-PCR, VP1 gene		0	12
VP1 gene sequencing		0	12

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 (nonWOAH-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
Kit for detection of FMD antibodies by ELISA	LPB ELISA	-----	2654 kits	12 kits	1	BELARUS,
Kit for FMDV antigen detection by ELISA	ELISA (Ag detection ELISA)	-----	267 kits	4 kits	1	KYRGYZSTAN,
FMD NSP-ELISA kit	NSP-ELISA	-----	44 kits	10 kits	1	INDONESIA,
FMD-real-time RT-PCR test kit	FMDV RT-PCR	-----	23 kits	0	1	RUSSIA,
FMDV-type specific sera	CFT	-----	21 ml	101 ml	1	KAZAKHSTAN,

4. Did your laboratory produce vaccines?

Yes

5. Did your laboratory supply vaccines to WOAHO Members?

Yes

VACCINE NAME	AMOUNT SUPPLIED NATIONALLY	AMOUNT SUPPLIED INTERNATIONALLY (ML, MG)	NAME OF RECIPIENT WOAHO MEMBERS
Adsorbed FMD vaccine	contract	contract	AFGHANISTAN ARMENIA BANGLADESH EGYPT IRAN JORDAN KAZAKHSTAN KUWAIT LEBANON MOROCCO OMAN PAKISTAN RUSSIA SYRIA UNITED ARAB EMIRATES
Emulsion ARRIAH-VAC polyvalent FMD vaccine	contract	contract	KAZAKHSTAN KOREA (REP. OF) MONGOLIA PAKISTAN RUSSIA

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 WOAHO 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 blocking indirect sandwich ELISA test system for determination of antibody titre against genotype A/ASIA/G-VII FMDV A No.2269/ARRIAH/2015 strain in sera from immunized animals	RF Patent No. 2787714, Bul. No.2 of 11.01.2023 // Application No. 2022108324 / Lugovskaya N.N., Doronin M.I., Mikhailishin D.V., Gochmuradov Y.M., Okovyataya T.V., Borisov A.V.
Liquid phase blocking indirect sandwich ELISA test system for determination of antibody titre against genotype O/ME-SA/PanAsia2 FMDV O strain in sera from immunized animals	RF Patent No. 2791614, Bul. No.8 of 13.03.2023 // Application No. 2022119118 / Lugovskaya N.N., Doronin M.I., Mikhailishin D.V., Okovyataya T.V., Borisov A.V., Voyevodina M.E.
Liquid phase blocking indirect sandwich ELISA test system for quantification of humoral immunity level against the antigen of genotype A/AFRICA/G-IV FMDV A No.2205/G-IV strain in animals	RF Patent No. 2 798 510, Bul. No.18 of 23.06.2023. // Application No. 2022122687 // Doronin M.I., Lugovskaya N.N., Mikhailishin D.V., Gochmuradov Y.M., Borisov A.V., Voyevodina M.E.
Liquid phase blocking indirect sandwich ELISA test system for determination of antibody level against the antigen of genotype A/ASIA/SEA-97 FMD virus	RF Patent No. 2 804 845, 09.10.2023. // Application No. 2023112446 / Doronin M.I., Lugovskaya N.N., Mikhailishin D.V., Borisov A.V., Razumova A.A., Sharypov A.S., Okovyataya T.V.
Method for rapid quantification of humoral immunity level against genotype O/ME-SA/Ind-2001 FMDV O No.2311/Zabaikalsky/2016 strain in vaccinated animals with liquid phase sandwich ELISA	RF Patent No. 2796393, Bul. No.15 of 24.05.2023 // Application No. 2022113420 / Lugovskaya N.N., Doronin M.I., Mikhailishin D.V., Gochmuradov Y.M., Okovyataya T.V., Borisov A.V.

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

Yes

9. Did your laboratory validate vaccines according to WOAHO 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 foot-and-mouth disease based on strain of new genotype A/ASIA/Iran-05FAR-11	RF Patent No. 2 798 293, Bul. No.18 of 21.06.2023 // Application No. 2022127249 / Doronin M.I., Mikhailishin D.V., Borisov A.V., Razgulyaeva Ye. A.
Culture inactivated adsorbed vaccine against foot-and-mouth disease based on of new genotype A/ASIA/Iran-05SIS-13	RF Patent No. 2 799 605, Bul. No.19 of 07.07.2023 // Application No. 2022130486 / Doronin M.I., Mikhailishin D.V., Borisov A.V., Guseva M.N., Yelkina Yu.S.
Culture inactivated adsorbed vaccine against genotype O/EA-2 foot-and-mouth disease based on O strain	RF Patent No. 2 802 198, Bul. No.24 of 22.08.2023 // Application No. 2023106752 / Doronin M.I., Mikhailishin D.V., Borisov A.V., Lugovskaya N.N., Nikiforov V.V., Fomina S.N.
Culture inactivated emulsion vaccine against genotype O/SEA/Mya-98 foot-and-mouth disease based on O No.2383/Primorsky/2019 strain	RF Patent No. 2 804 803, Bul. No.28 of 05.10.2023 // Application No. 2023112433 / Doronin M.I., Mikhailishin D.V., Borisov A.V., Voyevodina M.E., Okovytya T.V., Yelkina Yu.S., Nikiforov V.V.
Culture inactivated adsorbed vaccine against genotype SAT-2/VII foot-and-mouth disease based on SAT-2 strain	RF Patent No. 2 804 875, 09.10.2023 // Application No. 2023112437/ Doronin M.I., Mikhailishin D.V., Borisov A.V., Chvala I.A., Nikiforov V.V., Fomina S.N., Shevchenko M.A.
Method for indirect determination of FMD virus infectivity titre in non-inactivated vaccine production seed using mathematical double differential of the crossing point data during viral cDNA amplification	RF Patent No. 2793900, Bul. No.10 of 07.04.2023, Application No. 2022119924 / Doronin M.I., Mikhailishin D.V., Borisov A.V., Yelkina Yu.S., Budina O.O.

TOR4: DIAGNOSTIC TESTING FACILITIES

10. Did your laboratory carry out diagnostic testing for other WOAAH Members?

Yes

NAME OF WOAAH 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
JORDAN	2023-08-11	ELISA, virus isolation, RT-PCR, nucleotide sequencing	0	5
UGANDA	2023-09-28	virus isolation, RT-PCR, nucleotide sequencing	0	15

11. Did your laboratory provide expert advice in technical consultancies on the request of an WOAAH Member?

Yes

NAME OF THE WOAAH MEMBER COUNTRY RECEIVING A TECHNICAL CONSULTANCY	PURPOSE	HOW THE ADVICE WAS PROVIDED
PAKISTAN	Analysis of causes of FMD outbreak occurrence in Pakistan and ways of addressing the issues related to the FMD outbreaks in the region	Recommendations on the 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 WOAAH 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 animals	European Commission for the Control of Foot-and-Mouth Disease (EuFMD)	ARMENIA AZERBAIJAN GEORGIA IRAN TURKEY
Joint CIS measures for FMD prevention and control	until 2025	-	-	ARMENIA AZERBAIJAN BELARUS KAZAKHSTAN KYRGYZSTAN MOLDOVA TAJIKISTAN

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

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 farm animal FMD in the Russian Federation, FMD introduction and spread risk analysis, training webinars.
- epidemic data are collected for application for recognition of the WOA?H statuses of FMD free zones with/without vaccination

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 farm animal FMD in the Russian Federation, FMD introduction and spread risk analysis, training webinars.
- epidemic data are collected for application for recognition of the WOA?H statuses of FMD free zones with/without vaccination

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:

7

1. *Insights into the Molecular Epidemiology of Foot-and-Mouth Disease Virus in Russia, Kazakhstan, and Mongolia in Terms of O/ME-SA/Ind-2001e Sublineage Expansion* / V. Nikiforov, A. Shcherbakov, Il. Chvala, S. Kremenchugskaya, F. Korennoy, T. Mayorova, A. Timina, S. Tyulegenov, S. Abdrakhmanov, M. Berdikulov, T. Sainnokhoi, D. Gombo-Ochir, T. Tserenchimed, L. Prokhvatilova, A. Sprygin *Viruses* 2023, 15, 598
2. *Zakharov V.M. History of the FGBI "ARRIAH" international cooperation on foot-and-mouth disease (on occasion of the 65th anniversary of the Institute)* / V. M. Zakharov // *Veterinary Science Today*, 2023. V. 12, No.2. -P.102-110
3. *Inactivation of foot-and-mouth disease virus for vaccine production* /D. V. Mikhailishin, V.V. Mikhailishin, Y. M. Gochmuradov, Yu. S. Yelkin // *Veterinary Science Today*, 2023. V. 12, No. 2. -P.164-170
4. *Analysis of FMD virus spread with milk and dairy products* /A. V. Mischenko, A. M. Gulyukin, M. I. Gulyukin [et al.] // *Veterinariya*, 2023. No. 1. -P.11-15
5. *Yakovleva A.S. Detection of antibodies to FMD virus non-structural proteins (review)* /A. S. Yakovleva, A. V. Scherbakov // *Veterinary Science Today*. -Vladimir: FGBI "ARRIAH", 2023. V. 12, No.3.-P.190-196
6. *Doronin M. I., Mikhailishin D. V., Sprygin A. V., Mazlum A., Zhanova T. V., Gruzdev K. N., Chernysheva E. V. Modern approaches to development of real-time qPCR test-kits.* *Veterinary Science Today*. 2023; 12 (3): 197–207.
7. *Diagnostic test-system for detection of antibodies to genotype SAT2/VII FMD virus structural proteins with liquid-phase blocking ELISA* / N.N. Lugovskaya, E.A. Silantyeva, D.V. Mikhailishin, N.V. Moroz, M.P. Malygin, A.A. Kharitonova, M.I. Doronin, Y.M. Gochmuradov, T.V. Okovyataya, A. V. Borisov // *Actual Questions of Veterinary Biology*. – 2023. - No 4 (60). – P 43-52.

b) International conferences:

1

1. *Molecular and epizootological testing of serotype SAT-2 FMD virus for its properties and development of specific prevention tools* //V. V. Nikiforov, M. I. Doronin, S. N. Fomina [et al.] // *Proceedings of the International Scientific and Practical Conference «New generation vaccines for highly dangerous livestock animal disease prevention* ", 2023.- P.14-21

c) National conferences:

0

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

1

<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 WOA H Members?

Yes

a) Technical visit : 5

b) Seminars : 5

c) Hands-on training courses: 1

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	IRAN	3
A	GAMBIA	4
A	KOREA (REP. OF)	3
A	UGANDA	6
A	IRAN	8
B	PAKISTAN	100
B	RUSSIA	200
B	ARMENIA	15
B	AZERBAIJAN	15
B	GEORGIA	15
C	ARMENIA	3
C	RUSSIA	3

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 WOA?H?

Yes

NATIONAL/ INTERNATIONAL	TITLE OF EVENT	CO-ORGANISER	DATE (MM/YY)	LOCATION	NO. PARTICIPANTS
International	International Scientific and Practical Conference "Veterinary Medicine in Food Security and Biological Safety" dedicated to the 65th anniversary of the establishment of the Federal Center for Animal Health.	-	2023-12-07	Hotel "Veles" (Vladimir Oblast, Russia)"	150

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

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
PPR Blueprint Consultation and FMD Roadmap meeting for Economic Cooperation Organisation (ECO)/West Eurasia countries	2023-04-25	Baku Republic of Azerbaijan	speaker	Outline of the Regional Reference FMD Laboratory activities. Maintenance of official FMD free status of the zones in the Russian Federation
Seminar held at the National Veterinary Laboratory of the Republic of Pakistan	2023-06-06	Islamabad Republic of Pakistan	speaker	Strategy for FMD control and prevention
Meeting of the Commission on Economic Cooperation between the CIS-countries	2023-06-28	Moscow, Russia	speaker	Implementation of the Complex of joint CIS measures for FMD control up to 2025 in 2021-2022
International Scientific Conference in the framework of the Indo Livestock 2023 Expo & Forum	2023-06-27	Surabaya Indonesia	speaker	FMD vaccines and diagnostic test-systems
International Scientific and Practical Conference «Biotechnology and biological safety: achievements and prospects» devoted to the 65th anniversary of the Research Institute for Biological Safety Problems	2023-09-06	Almaty, Republic of Kazakhstan	speaker	Spread of O/ME-SA/Ind-2001e sublineage FMDV to Russia, Kazakhstan, Mongolia in 2021-2022 Study of Seneca valley virus within the improvement of FMD differential diagnosis
International Seminar (FAO) on FMD and lumpy skin disease control and prevention	2023-10-03	Lahore, Republic of Pakistan	speaker	Anti-FMD vaccines manufactured by the FGBl «ARRAH»
International Scientific and Practical Conference «New generation vaccines for highly dangerous livestock animal disease prevention within the project «Development of				Molecular and epidemiological testing of serotype SAT-2 FMD

complex of measures for protection from economically and socially significant animal diseases based on production microorganism strains selected with genome sequencing methods»	2023-10-10	Moscow, Russia	speaker	virus for its properties and development of specific preventive tools
45th Meeting of the Intergovernmental Council for cooperation in veterinary field	2023-11-08	Tashkent, Republic of Uzbekistan	speaker	Implementation of the Complex of joint CIS measures for FMD control up to 2025
International Conference «Molecular diagnosis in 2023	2023-11-14	Moscow, Russia	speaker	Analysis of circulation of FMD virus genetic lines considering risk of their introduction to the Russian Federation
The 18th Annual Meeting of the WOA/FAO FMD Reference Laboratory Network (online)	2023-10-11	NCFAD, Winnipeg Canada (online)	speaker	Progress report of the WOA/FAO Regional reference laboratory for FMD (FGBI "ARRIAH") for 2023

TOR10: NETWORK WITH WOA/FAO REFERENCE LABORATORIES

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

Yes

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

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOA/FAO REF. LABS
WOA/FAO FMD Laboratory Network	PARTICIPANT	16	Annual Meeting of the WOA/FAO FMD Reference Laboratory Network

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

No

26. Did your laboratory collaborate with other WOA/FAO 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 WOA/FAO REFERENCE LABORATORIES
Molecular epidemiology of FMD outbreaks	Exchange with FMDV genome sequences according to the Memorandum of understanding of the WOA/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 WOA/FAO Reference Laboratories for the same pathogen?

Yes

Purpose for inter-laboratory test comparisons ¹	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Name of the Test	WOA/FAO Member Countries
Specificity of the FMD diagnostic tests	ORGANIZER	10	LPB ELISA	ARMENIA, AZERBAIJAN, BELARUS, KAZAKHSTAN, KYRGYZSTAN, MOLDOVA, MONGOLIA, RUSSIA,

TOR12: EXPERT CONSULTANTS

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

Yes

KIND OF CONSULTANCY	Location	SUBJECT (FACULTATIVE)
response to doctor's D. King request (FAO/WOA/FAO World		

Reference Laboratory for Foot and Mouth Disease, Pirbright, UK)	ARRIAH	Changes to Sections C. and D. of Chapter 3.1.8. Foot and Mouth Disease WOAH Terrestrial Manual
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29. Additional comments regarding your report:

No