World Organisation for Animal Health

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WOAH Collaborative Centre Reports Activities 2024

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CENTRE INFORMATION

***Title of WOAH Collaborating Centre**	Diagnosis and Control of viral animal diseases in Eastern Europe, Central Asia and Transcaucasia
***Address of WOAH Collaborating Centre**	Federal Centre for Animal Health (FGI-ARRIAH)
***Tel:**	+7(4922) 26 06 14
***E-mail address:**	arriah@fsvps.gov.ru
Website:	www.arriah.ru
***Name Director of Institute (Responsible Official):**	Roman N. Rybin, Director of FGBI "ARRIAH"
***Name (including Title and Position) of Head of the Collaborating Centre (WOAH Contact Point):**	Ilya Chvala, Deputy director for research
***Name of the writer:**	Anna Irza, Head of Sector for Cooperation with International Veterinary Organizations Information Analysis Center Department for Veterinary Surveillance

TOR 1 AND 2: SERVICES PROVIDED

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by WOAH

Category	Title of activity	Scope
		1) Missions of the FGBI ARRIAH

Disease control (true)	1) Infectious disease diagnosis in the Russian Federation 2) Infectious disease diagnosis in other countries	employees to various subjects of the Russian Federation in order to provide consulting assistance in the diagnosis of animal diseases, sampling of pathological materials, organizing and conducting anti-epizootic measures: Vladimir, Voronezh, Saratov, Bryansk , Nizhny Novgorod, Kursk, Smolensk, Kostroma, Ryazan, Belgorod, Lipetsk, Penza, Yaroslavl, Amur, Astrakhan, Murmansk, Tyumen, Moscow, Tula, Tver, Samara, Saratov, Kursk, Volgograd, Kaluga Oblasts, Republic of Karelia, Krasnoyarsk Krai, Krasnodar Krai, Stavropol Krai, republics of North Caucasian Federal District, Primorsky Krai, Kamchatka Krai, Krasnoyarsk Krai, Zabaikalsky Krai, Stavropol Krai, Dagestan, R. Udmurtia, R. Crimea, R. Tatarstan. 2) Missions of the FGBI ARRIAH employees to foreign counties in order to provide consulting assistance in the diagnosis of animal diseases, organizing and conducting anti-epizootic measures: Republic of Belarus, Republic of Kazakhstan, Republic of Tajikistan, Republic of Uzbekistan, Republic of Tajikistan, Republic of Armenia, Republic of Turkmenistan, South Africa, Pakistan.
Zoonoses (true)	1) Rabies monitoring 2) BSE monitoring 3) COVID-19 monitoring	1) Rabies monitoring 1567 rabies tests were conducted for 69 subjects of the Russian Federation: DFA (antigen detection) - 360 RTCIT (virus isolaton) - 304 NV (virus neutralasition (FAVN)) - 957. 308 NV tests were conducted for the Republic of Belarus and the Kyrgyz Republic 2) BSE monitoring 18329 ELISA tests for diagnosis of BSE were conducted for 79 subjects of the Russian Federation 3) COVID-19 monitoring 111 tests for diagnosis of COVID-19 (samples from cats, dogs, wolves, foxes, raccoon dogs, squirrels, spotted reindeer and seals) were conducted using PCR.
		1) Newcastle disease monitoring 83260 tests for diagnosis of Newcastle disease were conducted for 81 subjects of the Russian Federation: Real-Time RT-PCR -

Avian diseases (true)	1) Newcastle disease monitoring 2) Avian influenza monitoring	8700 ELISA - 33407 Hemagglutination Inhibition Assay (HAI) - 40871 Virus isolation -130 Nucleotide sequencing 152 Testing samples from foreign countries (R. Uzbekistan, R. Belarus, R. Kazakhstan)-196 : - Hemagglutination Inhibition Assay (HAI) - 88 - ELISA 88 - Real-Time RT-PCR - 20 2) Avian influenza monitoring 116 067 samples obtained from 83 subjects of the Russian Federation were tested for avian influenza: Real-Time RT-PCR - 17600, ELISA - 53750, Hemagglutination Inhibition Assay (HAI) - 44378 Virus isolation -221 Nucleotide sequencing -118 Testing of samples obtained from foreign countries (R. Uzbekistan, R. Belarus, R. Kazakhstan)- 196 : Real-Time RT-PCR – 20 - Hemagglutination Inhibition Assay (HAI) - 88 - ELISA - 88
Aquatic animal diseases (true)	1) Diagnosis of spring viremia of carps (SVC) 2)Diagnosis of infectious hematopoietic necrosis (IHNV) 3) Diagnosis of viral hemorrhagic septicemia in salmonids 4) Diagnosis of infectious pancreatic necrosis in salmonids 5) Diagnosis of epizootic hematopoietic necrosis 6) Diagnosis of infectious anemia in salmonids 7) Diagnosis of alphavirus disease in salmonids 8)Diagnosis of spring viremia of carps (SVC)	1) Diagnosis of spring viremia of carps (SVC) 436 tests (ELISA - 212; PCR – 12, viral isolation in cell culture - 212) were conducted for 52 subjects of the Russian Federation. 2) Diagnosis of infectious hematopoietic necrosis (IHNV) 651 tests (ELISA - 332; PCR – 111, viral isolation in cell culture - 208) were conducted for 29 subjects of the Russian Federation 1 ELISA- test was conducted on a sample obtained from the Republic of South Ossetia. 3) Diagnosis of viral hemorrhagic septicemia in salmonids 632 tests (ELISA - 332; PCR – 92, viral isolation in cell culture - 208) were conducted for 28 subjects of the Russian Federation. 1 ELISA test was conducted on a sample obtained from the Republic of South Ossetia. 4) Diagnosis of infectious pancreatic necrosis in salmonids 651 tests (ELISA - 332; PCR – 111, viral isolation in cell culture - 208) were conducted for 29 subjects of the Russian Federation. 1 ELISA test was conducted on a sample obtained from the Republic of South Ossetia. 5) Diagnosis of epizootic hematopoietic necrosis 285 tests were conducted (PCR – 278, virus isolation in cell culture - 7) for 18 subjects of the Russian Federation 1 ELISA test was

		conducted on a sample obtained from the Republic of South Ossetia. 6) Diagnosis of infectious anemia in salmonids 400 PCR tests were conducted for 25 subjects of the Russian Federation 1 ELISA test was performed on a sample obtained from the Republic of South Ossetia 7) Diagnosis of alphavirus disease in salmonids 28 PCR tests were conducted for 6 subjects of the Russian Federation 8) Diagnosis of spring viremia of carps (SVC) 436 tests (ELISA - 212; PCR - 12 , viral isolation in cell culture - 212) were conducted for 52 subjects of the Russian Federation
		1) Diagnosis of bluetongue 3475 tests (3175 tests of blood sera of cattle/small ruminants for antibodies to bluetongue virus using ELISA, 297 tests of biomaterial samples using PCR) were conducted for 15 subjects of the Russian Federation. 2) Diagnosis of CSF 13750 tests were conducted for 65 subjects of the Russian Federation: 3015 tests - ELISA , 10752 samples were tested for detection of CSF virus genome by polymerase chain reaction (PCR-PCR-RV), 10 samples - virus isolation in cell culture. 3) Diagnosis of ASF 8027 tests were conducted for 75 subjects of the Russian Federation: 6394 - tests were conducted to detect ASF virus genome by polymerase chain reaction (PCR-RV), 1222 - tests were conducted to detect ASF virus by virus isolation in cell culture methord, 317 - entomological surveillance (microscopy) 94- immunoperoxidase method 4) Diagnosis of Schmallenberg disease 64 PCR tests were conducted for 4 subjects of the Russian Federation. 5) Diagnosis of LSD 3000 PCR tests were conducted for 24 subjects of the Russian Federation. 6) Diagnosis of FMD 392192 tests were conducted for 85 regions of the Russian Federation: Indirect diagnostic tests - Liquid phase blocking indirect ELISA (LPB ELISA) (271817 samples of serum were tested for antibodies to FMD virus structural proteins); - Virus neutralization

Diagnosis, biotechnology and laboratory (true)	1) Diagnosis of bluetongue 2) Diagnosis of CSF 3) Diagnosis of ASF 4) Diagnosis of Schmallenberg disease 5) Diagnosis of LSD 6) Diagnosis of FMD 7) Diagnosis of PPR 8) Diagnosis of CBPP	test (VNT) (3995 samples of serum were tested); - Indirect NSP-ELISA (ELISA-NSP) (95308 samples of serum were tested for antibodies to non-structural proteins of FMD virus); - Antigenic matching in micro-neutralization (MN) assays (216) Direct diagnostic tests - Virus isolation in cell culture - 150 - Indirect indirect double-antibody sandwich variant ELISA -150 samples of biomaterials were tested; - complement-fixation test (CFT) - 150 - RT-PCR, 3D gene - 10203 - RT-PCR, 5'HTO gene -10203 Testing of samples obtained from foreign countries 1336 samples obtained from foreign countries (Uganda, Pakistan, R. Kazakhstan) were tested. Indirect diagnostic tests - Liquid phase blocking indirect ELISA (LPB ELISA) - 624 tests of blood serum for antibodies to structural proteins of FMD virus were conducted; - Virus neutralization test (VNT) - 648 tests of serum samples; - Indirect NSP-ELISA (ELISA-NSP) -46 Direct diagnostic tests - Virus isolation in cell culture - 3 - Indirect double-antibody sandwich variant ELISA- 3 biomaterial samples; - Real-time PCR, 3D gene- 3 - Real-time PCR, 5'HTO gene- 3 - Real-time PCR, VP1 gene- 3 - Sequencing of VP1 gene -3 7) Diagnosis of PPR 20820 samples were tested for 89 subjects of the Russian Federation: 20170 samples - by ELISA ; 650 samples - by PCR ; 27 samples - by virus neutralization test (VNT) 8) Diagnosis of CBPP 19997 ELISA tests were conducted for 89 subjects of the Russian Federation.
Food security (true)	Food safety monitoring	5192 tests were conducted . Test methods: physico-chemical, microbiological, radiological, ELISA, RT- PCR, HELC-MS/MS, HPLC, GC, GC-MS

TOR 3: HARMONISATION OF STANDARDS

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main fucus

area for which you were designated

Proposal title	Scope/Content	Applicable Area
Methodological recommendations on determining the titer of antibodies in the blood serum of carnivorous animals to the influenza virus subtype H5 in the hemagglutination inhibition (HAI) assay	Surveillance and prevention of poultry diseases	Laboratory Expertise Health Management
Methodological recommendations on planning and conducting monitoring tests for avian influenza and Newcastle disease in wild avifauna and in populations of domestic poultry in populated areas	Surveillance and prevention of poultry diseases	Laboratory Expertise Health Management
Methodological recommendations on the amplification of the avian influenza virus type A genome using RT-PCR to determine its nucleotide sequence by whole-genome sequencing methods	Surveillance and prevention of poultry diseases	Laboratory Expertise Health Management
Methodological recommendations on active and passive surveillance of highly pathogenic avian influenza in vaccinated livestock at commercial establishments	Surveillance and prevention of poultry diseases	Laboratory Expertise Health Management Animal Production
Methodological recommendations on purification, concentration and	Laboratory diagnosis of ASF	Laboratory Expertise Health Management

isolation of genome of ASF virus/capripoxvirus and for whole- genome sequencing		Animal Production
Methodological recommendations on planning laboratory tests and sampling to improve epizootological surveillance of CSF in the Russian Federation	Surveillance and laboratory diagnosis of CSF. Improved approaches of CSF surveillance as related to sampling and laboratory tests.	Laboratory Expertise Health Management
Methodological recommendations on planning laboratory testing and sampling to improve epizootological surveillance of ASF in the Russian Federation	Surveillance and laboratory diagnosis of ASF. Improved approaches of ASF surveillance as related to sampling and laboratory tests.	Laboratory Expertise Health Management Animal Production
Methodological recommendations on planning and conducting monitoring studies aimed at detecting the circulation of the causative agent of sheep pox and goat pox in populations of livestock and in wild animals	Surveillance and laboratory diagnosis of smallpox in sheep and goats	Laboratory Expertise Health Management
Methodological recommendations on determining the effectiveness of drugs against sheep pox and/or goat pox infection	Laboratory diagnostics of sheep pox and goat pox	Laboratory Expertise Health Management
Methodological recommendations on detection of DNA of vaccine strain "KSGP" and KSGP-like isolates of LSD virus by RT-PCR method.	Surveillance and laboratory diagnostics of LSD in cattle	

Methodological recommendations on planning and conducting monitoring studies aimed at detection of FMD pathogen circulation in populations of livestock and wild animals	FMD surveillance, including in wild animals	Laboratory Expertise Health Management Wildlife Health and Biodiversity
Methodological recommendations on planning and conducting monitoring studies aimed at identifying the causative agent of PPR in populations of livestock and wild animals	Surveillance and laboratory diagnosis of FMD	Laboratory Expertise Health Management
Methodological recommendations on determining the infectious activity of rabies virus by titration in cell culture	Surveillance and laboratory diagnosis of rabies	Laboratory Expertise Health Management
Methodological recommendations on the indirect determination of the titer of the culture virus of infectious pancreatic necrosis of salmonid fish strain "SRT 19 V" in raw materials and vaccine samples by real-time reverse transcription polymerase chain reaction	Surveillance and laboratory diagnosis of fish diseases	Laboratory Expertise Health Management

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

No

4. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres (CC), Reference Laboratories (RL), or

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organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

Name of WOAH CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
IAEA Zoonotic Disease Integrated Action Initiative (ZODIAC)	Austria	África Asia y el Pacífico Europa Oriente Medio	Strengthen the preparedness and capacity of Member States to rapidly identify and respond to zoonotic outbreaks in a timely manner.
FMD WRL	Pirbright Institute, UK	África América Asia y el Pacífico Europa Oriente Medio	Molecular epidemiology of FMD outbreaks Exchange of FMD virus genomic sequences, in accordance with the Memorandum of Understanding on the WOAH/FAO FMD Reference Laboratory network
WOAH PPR reference laboratories network.	France	Europa	Collaboration with the network of PPR reference laboratories.
Onderstepoort Veterinary Institute (Pretoria, South Africa)	Republic of South Africa	África	Coordination of joint research projects
OFFLU Secretariat	-	África América Asia y el Pacífico Europa Oriente Medio	Submission of genome sequences of avian influenza H5/H7/H9 viruses to the WOAH/FAO/WHO international network every 6 months
Department of Veterinary Service of the Ministry of Agriculture of the People's Republic of China, Department of Veterinary and Animal Breeding of the Executive Agency of the Government	China Mongolia	Asia y el Pacífico	Interaction in case of emergency of dangerous diseases, such as, FMD. Agreement on Cross-Border Trade and Reduction of the Risk of Spread of Transboundary Animal Diseases between China,

of Mongolia			Mongolia and Russia
European Foot-and-Mouth Disease Control Commission (EU FMD)	Rome, Italy	América Asia y el Pacífico Europa Oriente Medio	Exchange of information on disease outbreaks, animal vaccination. Cooperation on prevention and control of FMD and other transboundary animal diseases between the countries of Transcaucasia, Russia and Iran (GF-TADs)
Venice Institute of Experimental Zoophylaxis (IZSVe)	Padua, Italy	Europa	Repeated exchange of isolates of highly pathogenic avian influenza and Newcastle disease viruses detected on poultry farms during primary and epidemiologically significant outbreaks for comparative scientific research
Animal and Plant Health Agency (APHA)	Weybridge, England	Europa	Repeated exchange of isolates of highly pathogenic avian influenza and Newcastle disease viruses detected on poultry farms during primary and epidemiologically significant outbreaks for comparative scientific research
National Institute of Animal Health, National Agriculture and Food Research Organization (NIAH/NARO)	Japan	Asia y el Pacífico	Repeated exchange of isolates of highly pathogenic avian influenza and Newcastle disease viruses detected on poultry farms during primary and epidemiologically significant outbreaks for comparative research studies
General Laboratory for Zoonotic Infections Research, College of Veterinary Medicine, Jilin University	Jilin province, Changchun, China	Asia y el Pacífico	Conducting joint studies of isolates of Newcastle disease virus and avian paramyxoviruses of other serotypes.
			Examination of the genetic

Microbiology Laboratory, Department of Disease Control, Faculty of Veterinary Medicine, Hokkaido University	Hokkaido, Japan	Asia y el Pacífico	properties of Far Eastern isolates of the H5N1 subtype avian influenza virus detected in the Russian Federation in 2022-2023

TOR 4 AND 5: NETWORKING AND COLLABORATION

5. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

Name of WOAH CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
Intergovernmental Council for Cooperation in the Field of Veterinary Medicine	Armenia Belarus Kazakhstan Kyrgyzstan Tadjikistan Uzbekistan	Asia and Pacific Europe	Joint measures of the CIS member states to prevent and control FMD, rabies, highly pathogenic avian influenza and Newcastle disease

TOR 6: EXPERT CONSULTANTS

6. Did your Collaborating Centre place expert consultants at the disposal of WOAH?

Yes

Name of expert	Kind of consultancy	Subject
Dr Viktor Irza	WOAH Reference Laboratory	Avian Influenza, Newcastle disease
Dr Valery Zakharov	WOAH Reference Laboratory	FMD

TOR 7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area?

Yes

The Center provided advisory and diagnostic services for WOAH member-countries:

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Provision of expert consultations on control and prevention of infectious poultry diseases for Belarus, Kazakhstan, Uzbekistan, Tajikistan.
Conducting diagnostic tests of samples of biological materials for poultry farms in Belarus (88 tests for avian infectious bronchitis (IB) , 43 tests for metapneumovirus, 45 tests for adenovirus infection were conducted using ELISA; 43 tests for egg drop syndrome, 88 tests for Newcastle disease, 88 tests for H5 influenza were conducted using hemagglutination-inhibition test (HI)).
The Center provided consulting and diagnostic services in the field of control and prevention of infectious cattle diseases:
3 samples from Uganda were tested for FMD using the methods of virus isolation, RT-PCR, and nucleotide sequencing.
The Center provided expert advice at the request of the Islamic Republic of Pakistan on the analysis of the causes of FMD outbreaks in Pakistan, ways to solve problems related to FMD outbreaks in the region, as well as recommendations on the selection of vaccine strains.
Marketing of diagnostic reagents and vaccines against avian influenza:

Influenza vaccine
- *Avian Influenza H9N2 + Newcastle Disease associated killed oil-based vaccine (Russia, Belarus, Kazakhstan)*
- *Avian Influenza H5N1 + Newcastle Disease associated killed oil-based vaccine (Russia, Belarus, Kazakhstan)*

The diagnostic kits have been delivered to the following countries:
- *Kits for detection of avian influenza virus subtype H9 antibodies in HI test (Russia, Belarus, Kazakhstan)*
- *Kits for detection of avian influenza virus subtype H5 antibodies in HI test (Russia, Belarus, Kazakhstan)*
- *Kits for detection of avian influenza virus subtype H5&H7 antibodies in HI test (Russia, Belarus, Kazakhstan)*
- *Kits for detection of avian influenza virus antibodies in one dilution immunoassay test (Russia, Belarus)*

Marketing of diagnostic reagents and vaccines against Newcastle Disease:

Newcastle Disease vaccine
- Live dry vaccine against Newcastle disease based on LaSota strain (Bangladesh, Egypt, Kazakhstan, Russia)
- ARRIAH-IB+ND Live dry vaccine against infectious bronchitis and Newcastle disease (Kazakhstan)
- Live dry vaccine against Newcastle disease based on ARRIAH ND Enteral strain (Bangladesh, Kazakhstan, Russia)
- Mono and combined inactivated oil-based vaccines containing NDV antigen (Belarus, Kazakhstan, Russia Uzbekistan, Azerbaidzhan)

The diagnostic kits have been delivered to the following countries:
- *Kits for detection of Newcastle disease virus antibodies in HI test (Russia, Belarus, Kazakhstan)*
- *Kits for detection of Newcastle disease virus antibodies in one dilution immunoassay test (Russia, Belarus)*
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Marketing of diagnostic reagents and vaccines against FMD:

FMD vaccine
- Sorbed FMD vaccine has been delivered to the following countries : Iran, Morocco, Azerbaijan, Libya, Afghanistan, Bangladesh, Kyrgyzstan, Pakistan, Syria, Jordan, Kazakhstan, Armenia, Saudi Arabia. Kuwait)
- *Emulsion FMD vaccine "ARRIAH-VAC" has been delivered to the following countries: Republic of Korea, Mongolia, Iraq, Kazakhstan.*

The diagnostic kits have been delivered to the following countries:
- FMD Antibody Detection Kit in ELISA (LPB ELISA) - Belarus, Iraq, Syria, Jordan, Uganda, Uzbekistan
- A kit for detecting FMD virus antigen in ELISA (ELISA Ag detection) - Uganda, Uzbekistan
- FMD-NSP-ELISA test-kit for detection of antibodies against FMD virus non-structural proteins - Iraq, Syria, Uganda, Uzbekistan
- FMDV typospecific serum (FMDV sera) - Uganda, Uzbekistan

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOAH, to personnel from WOAH Members?

Yes

a) Technical visit : 14

b) Seminars : 220

c) Hands-on training courses: 62

d) Internships (>1 month) : 0

Type of technical training provided (a, b, c or d)	Content	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
A	FMD epizootic situation in the world, diagnosis and prevention of FMD, use of FMD vaccines produced by the FGBI "ARRIAH	Democratic People's Republic of Korea	5
A	FMD epizootic situation in the world, diagnosis and prevention of FMD	Republic of Cuba	8
A	FMD epizootic situation in the world, laboratory diagnosis of FMD, application of test systems and kits produced by the FGBI "ARRIAH"	Republic of Uzbekistan	1
B	Advising veterinary specialists on qualified vaccine administration and monitoring studies	Pakistan	90
B	"Vaccines produced by the FGBI "ARRIAH" as an effective method of controlling sheep pox and goat pox and PPR. The FMD situation in the Middle East region".	Lebanon	80
B	A seminar for students on the collection of pathological materias for FMD testing, on the equipment and materials needed for sampling, on the requirements for transporting pathological materials. A practical lesson on sampling pathological materials for FMD testing	Uganda	50
C	Confirmation of conformity of products in the EU: general principles, manufacturer requirements, certification procedures	Republic of Belarus	8

C	Quick start, theoretical and practical application of the component of FGIS "VetIS" - "Mercury.HS"	Republic of Kazakhstan	1
C	Laboratory diagnosis of animal rabies (fluorescent antibody method, biological test on mice), determination of the presence of tetracycline antibiotics in teeth and bone tissues by fluorescence method.	Republic of Azerbaijan	2
C	Safety when working with biological materials of pathogenicity groups II-IV in veterinary laboratories	Republic of Kyrgyzstan	2
C	Preparation of nutrient media. Methods and procedure for quality control of nutrient media	Republic of Kyrgyzstan	2
C	Organization of disinfection, disinfection and deratization at livestock establishments and meat processing establishments	Republic of Kyrgyzstan	2
C	Procedure and rules of selection, packaging, transportation of samples of food products, feed, water, as well as wipes samples from various surfaces for laboratory testing	Republic of Kyrgyzstan	15
C	Laboratory diagnosis of bovine leukemia	Republic of Kyrgyzstan	4
C	Rules for the organization of work on the registration of veterinary accompanying documents in the FGIS "Mercury"	Republic of Kyrgyzstan	6
	Serological diagnosis of equine diseases: glanders, Equine infectious anemia (EIA), dourine, brucellosis, leptospirosis, Equine rhinopneumonitis (ER), Equine viral	Republic of Kyrgyzstan	2

C	arteritis (EVA) (agglutination test , complement fixation test, Rose Bengal Test, Diffuse precipitation test, microagglutination test, ELISA). Verification of research methods		
C	Serological diagnosis of small ruminamts diseases (brucellosis, infectious epididymitis, leptospirosis, chlamydia, listeriosis, paratuberculosis). Verification of methods	Republic of Kyrgyzstan	4
C	Laboratory diagnosis of viral cattle diseases. Intralaboratory quality control of virological research methods, validation/verification of research methods	Republic of Kyrgyzstan	4
C	Laboratory diagnosis of leptospirosis in animals	Republic of Kyrgyzstan	2
C	Serological diagnosis of brucellosis in animals by methods of agglutination test, complement fixation test, prolonged complement fixation test. , Rose Bengal Test, Agar Gel Immunodiffusion Test (AGID), Indirect hemagglutination test, ELISA	Republic of Kyrgyzstan	2
C	Bacteriological studies of animal diseases	Republic of Kyrgyzstan	2
C	Diagnosis of viral animals and poultry diseases by PCR	Republic of Kyrgyzstan	2
C	Preparation of the food safety management system at the establishment level during its certification for export. The procedure for organizing laboratory control of exported products	Republic of Kyrgyzstan	2

TOR 8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOAH?

Yes

National/International	Title of event	Co-organiser	Date	Location	No. Participants
Internationally	Meeting of the Regional Contact Group on the Implementation of the Roadmap for the Control of FMD and PPR in Western Eurasia under the Global Program for the Progressive Control of Transboundary Animal Diseases	GF-TADs	2024-07-04	Baku Republic of Azerbaijan	2
Internationally	46th Ordinary Meeting of the Intergovernmental Council for Cooperation in the Field of Veterinary Medicine for the CIS Member States	CIS	2024-10-22	Ashgabat, Republic of Turkmenistan	2
Internationally	31st Regional Conference of the World Organization for Animal Health	WOAH	2024-09-29	Samarkand, Republic of Uzbekistan	2
Internationally	Workshop of the World Organization for Animal Health (WOAH) global reference network of national laboratories for PPR (WOAH)	WOAH Reference Laboratory for PPR CIRAD (France)	2024-12-05	on-line	10
Internationally	Scientific and Practical Conference “Rabies - Overcoming Barriers”	WOAH, WHO, FAO, UNEP	2024-10-23	FGBI ARRAIH	60
Internationally	91st General Session of the World Organization for Animal Health (WOAH)	WOAH	2024-05-26	Paris	2

Internationally	19th Annual Meeting of the FAO/WOAH FMD Reference Laboratories Network	WOAH/FAO	2024-09-25	on-line	12
Internationally	Regional conference "One Health"	WOAH/FAO	2024-06-10	Vienna	1
Internationally	Meeting of the ASF expert group	WOAH	2024-09-16	Orkhid city, Republic of North Macedonia	2

TOR 9: DATA AND INFORMATION DISSEMINATION

10. Publication and dissemination of any information within the remit of the mandate given by WOAH that may be useful to Members of WOAH

a) Articles published in peer-reviewed journals:

57

1. A proposed update of African swine fever virus (genotype II) subgenotyping based on the central variable region (CVR) of Russian isolates / R. Chernyshev, A. Igolkin, A. van Schalkwyk [et al.] // Archives of Virology. - 2024. - Vol. 169. - Art. 147.

2. An Attenuated Vaccine Virus of the Neethling Lineage Protects Cattle against the Virulent Recombinant Vaccine-like Isolate of the Lumpy Skin Disease Virus Belonging to the Currently Established Cluster 2.5 / I. Shumilova, K. Shalina, Mohammad Abed Alhussen [et al.] // Vaccines. - 2024. - Vol. 12 (6), No. 598. - 15 p.

3. Application of modern spatio-temporal analysis technologies to identify and visualize patterns of rabies emergence among different animal species in Kazakhstan / A. A. Mukhanbetkaliyeva, A. M. Kabzhanova, A. S. Kadyrov, F.I. Korennoy [et al.] // Geospat Health. - 2024. - Vol. 19 (2).

4. Assessment of dourine situation in the North Caucasian and Southern Federal Districts of the Russian Federation in the period from 2020 to 2022 / G. A. Nurlygayanova, V. I. Belousov, S. V. Zyuzgina [et al.] // Agrarian Science. - 2024. - No. 5. - P. 46-50.

5. Astrovirus infection in animals (literature review) / V. A. Mischenko, A. V. Mischenko, T. B. Nikeshina, O. N. Petrova // Veterinary Science Today. - 2024. - Vol. 13, No. 4. - P. 322-329.

6. Avian adenovirus infections: diversity of pathogens, hazard to poultry industry and problems of immunoprophylaxis (review) / Yu. R. Zelensky, M. S. Volkov, I. A. Komarov [et al.] // Veterinary Science Today. - 2024. - Vol. 13, No. 1. - P. 36-43.

7. Canine adenovirus serotype 2 isolation and determination of its cultivation parameters / A. A. Klimova // Veterinary Science Today. - 2024. - Vol. 13, No. 4. - P. 352-359.

8. Characterization of H5N1 avian influenza virus isolated from bird in Russia with the E627K mutation in the PB2 protein / V. Yu. Marchenko, A. S. Panova, N. P. Kolosova, N. G. Zinyakov, D. B. Andreychuk [et al.] // Scientific Reports. - 2024. - Vol. 14. - Art. 26490.

9. Chukotka as a Portal for the Rabies Introduction into Kamchatka (Systematic Review) / A. D. Botvinkin, I. D. Zarva, S. A. Chupin [et al.] // Problems of Highly Dangerous Infections. - 2024. - P6-15.

10. Clinical efficacy studies of Carnifel PCH vaccine against feline panleukopenia, calicivirus infection and viral rhinotracheitis in kittens [/ T. S. Galkina, A. A. Komarova, A. M. Kiselev // Veterinary Science Today. - 2024. - Vol. 13, No. 2. - P. 164-170.

11. Comparative analysis of whole-genome sequences of African swine fever virus (Asfarviridae: Asfivirus) isolates collected on the territory of the left bank of the Dnieper River in 2023 / R. S. Chernyshev, A. S. Igolkin, N. G. Zinyakov, Il. A. Chvala // Problems of Virology. - 2024. - Vol. 69, No. 5. - P. 481-494.

12. Continuous Introduction of H5 High Pathogenicity Avian Influenza Viruses in Hokkaido, Japan: Characterization of Viruses Isolated in Winter 2022–2023 and Early Winter 2023–2024 / L. Y. Hew, N. Isoda, F. Takaya [et al.] // Transboundary and Emerging Diseases. - 2024. - Vol. 2024.

13. Detection of the first recombinant African swine fever virus (genotypes I and II) in domestic pigs in Russia / A. Igolkin, A. Mazloum, N. Zinyakov [et al.] // Molecular Biology Reports. - 2024. - Vol. 51. - Art. 1011. - 9 p.

14. Development and testing of CARNIVAC-COV inactivated adsorbed whole-virion coronavirus (COVID-19) vaccine for carnivorous

animals / D. G. Isakova, G. Yu. Kosovsky, Il. A. Chvala [et al.] // Veterinary Medicine. - 2024. - No. 5. - P. 10-15.

15. Development and validation of highly sensitive multiplex real-time RT-PCR assay for detection of classical swine fever virus genome / A. S. Sadchikova, A. S. Igolkin, R. S. Chernyshev [et al.] // Veterinary Science Today. - 2024. - Vol. 13, No. 3. - P. 223-233.

16. Etiology and epizootology of bovine mastitis (analytical review) / A. A. Andreyeva, V. A. Yevgrafova, M. S. Voronina [et al.] // Veterinary Science Today. - 2024. - Vol. 13, No. 1. - P. 27-35.

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18. First detection and biological characterization of an avian metaavulavirus 8 isolated from a migratory swan goose in Qinghai Lake, Northwest China / S. Wang, X. Liu, J. Chen, D.B. Andreychuk, [et al.] // Microbiology and Immunology. - 2024. - 7 p.

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b) International conferences:

42

1. 3rd Online (Zoom) Meeting for the WOAH avian disease network in East Asia, April 2, 2024.

2. GF-TADs emergency meeting on AI, on-line, April 4, 2024.

3. GF-TADs emergency meeting on AI, on-line, May 22, 2024.

4. Highly Pathogenic Avian Influenza – UPDATE, FAO - IAEA (webinar), May 9, 2024.

5. International forum and exhibition of the Russian fishing industry called "Global Fishery Forum @Seafood Expo Russia". (16-18.09.2024, St. Petersburg).

6. International Scientific and Practical Conference of Young Scientists "Young Scientists in Science and Practice of AIC" (23-27.03.2024, Republic of Belarus, Minsk).

7. International Seminar for Poultry specialists "Increasing Effectively Eggs Production", Guliston,Tajikistan, April 18, 2024.

8. OFFLU avian influenza teleconference 12 December, 2024.

9. OFFLU Global Technical Meeting, 2- 4 July, 2024, FAO Headquarters (on-line).

10. OFFLU Pre VCM Meeting, on-line, February 2, 2024.

11. OFFLU zoom meeting to update avian and swine influenza data contributions to Sept 2024 WHO VCM, 18 September, 2024.

12. Seminar for veterinary authorities of Eurasian Economic Union member-states on the topic "WOAH standards for Avian Influenza. Highly Pathogenic Avian Influenza – problems of control and prevention, trends of spread". 21 November 2024, Moscow.

13. The International scientific-practical conference "Scientific bases of production and quality assurance of biopreparations (30.10.2024, Moscow region).

14. The 37-th Session of the Food and Agriculture Organization of the United Nations (FAO) Regional Conference for Asia and the Pacific in Colombo (18-23.02.2023, Colombo, Sri Lanka). Colombo, Sri Lanka).

15. The All-Russian scientific and practical conference with international participation "Arctic - territory of strategic scientific research. The Second Arctic Congress" (Yakutsk, 2024).

16. The Conference on Innovations in Animal Health, Reference Centers and Vaccines (22-26.09.2024, Rome, Italy).

17. The Eighteenth International Conference "Compound feeds - 2024" (25.04.2024, Moscow).

18. The Eighteenth International Scientific and Practical "Baltic Forum on Veterinary Medicine and Food Safety" (11-14.09.2024, St. Petersburg).

19. The Eleventh Kazakhstan International Forum of Poultry Breeders (25-28.06.2024, Republic of Kazakhstan, Astana).

20. The Fifth All-Russian Scientific-practical Conference with International Participation "Actual problems of diseases common to animals and humans" (24-25.05.2024, Sevastopol).

21. The International Conference "Innovations and effective solutions in poultry farming" (28-31.05.2024, Minsk, Republic of Belarus).

22. The International Congress called "Virology Africa 2024" (13-19.04.2024, Cape Town, South Africa).

23. The International Exhibition "Meat Industry. Chicken King. Cold industry for agro-industrial complex / MAP Russia"(20.05.2024, Moscow region).

24. The International exhibition of technologies for agro-industrial complex professionals "AGROS-2024 EXPO" (24.01.2024, Moscow).

25. The International Forum "Agro.Pro. Poultry farming. Pig breeding. Cattle" (19-22.03.2024, St. Petersburg).

26. The International Scientific Conference "Fundamental and Applied Sciences - Medicine" October 10, 2024 in Minsk.

27. The International scientific-practical conference "Actual issues of modern epizootology" (24.10.2024, Moscow).

28. The International Scientific-Practical Conference "Actual Issues of Veterinary Medicine, Zootechnics and biotechnology", dedicated to the 105th anniversary of the founding of FGBOU VO MGAVMIB - MVA named after K. I. Skryabin. (15.11.2024, Moscow).

29. The International scientific-practical conference "Biotechnology: scientific research and connection with production", Shchelkovo, 2024.

30. The International Veterinary Forum on pig breeding (26.06.2024, Moscow).

31. The Second International Agricultural Congress and Exhibition ASIAEHPO 2024 (22-26.10.2024, Krasnodar Krai).

32. The Second International Forum "AQUACULTURE" (22.05.2024, Moscow).

33. The Seventh International Congress of Veterinary Pharmacologists and Toxicologists. 06-09.2024, Republic of Uzbekistan.

34. The Seventh International Forum of Poultry Breeders (18-20.11.2024, Tashkent, Uzbekistan).

35. The Thirteenth International Scientific and Practical Conference and Exhibition "Veterinary Medicine in the agro-industrial complex-2024", individual consultation from the developer of the component "Horriot" of FGIS "VetIS" (02-07.06.2024, Novosibirsk region).

36. The Thirteenth International Scientific and Practical Conference and Exhibition "Veterinary Medicine in Agro-industrial Complex (03-

07.06.2024, Novosibirsk).
37. The Thirty-second Moscow International Veterinary Congress (08-12.04.2024, Moscow).
38. VI International Workshop "The impact of climate changing on biological diversity and spreading of new viral infections in Eurasia", organized by Federal Research Centre FTM, Novosibirsk, 3-5 December 2024 (webinar).
39. VII Uzbekistan International Poultry Forum, Tashkent, November 19, 2024. Current HPAI Panzootic. Prevention and Control.
40. Webinar GF-TAD: Update of the Avian Influenza situation of in Cattle and humans, November 22, 2024.
41. Webinar: OFFLU Avian Influenza Matching (AIM) for Poultry Vaccines, 10 July 2024.
42. XI Kazakhstan International Poultry Forum, Astana, June 25, 2024.

c) National conferences:
20
1. The Agro-industrial exhibition called "AgroRus" (27-29.08 2024, St. Petersburg).
2. The scientific and practical conference (12.09.2024, Moscow).
3. The Third Industry Scientific and Practical Conference "Water and Fish" (15-17.10.2024, Sochi, Russia).
4. The Scientific and practical conference on the basis of VNITIBP and 48th Central Research Institute of the Ministry of Defense of the Russian Federation (30.10.2024, Moscow, Sergiev Posad).
5. The Conference "Diagnostics and monitoring of especially dangerous animal infections", "Development of ASF vaccine, that can be administered orally in wild boar" (19.11.2024, Nizhny Novgorod).
6. The seminar with a report and presentations on "Vaccines preventing viral infections in dogs and cats produced by FGBI 'ARRIAH' (06.12.2024, Nizhny Novgorod).
7. The Fourth Interregional Agro-industrial Conference MAK-2024 (14.02.2024, Chelyabinsk).
8. The Conference within the framework of the Integrated Plan of Fundamental Scientific Researches (31.01.2024, Nizhny Novgorod).
9. The Seminar-Conference: Accreditation and confirmation of competence (25.03.2024, Nizhny Novgorod).
10. The All-Russian Scientific and Practical Conference of Young Scientists dedicated to the Day of Russian Science (06-09.02.2024, Amur Oblast, Blagoveshchensk).
11. The Practical exhibition-conference Generium-DIAEM (06.03.2024, Vladimir Oblast).
12. The Seminar "One-time solutions for biopharmaceuticals and technology transfer" (23.05.2024, Moscow).
13. The Seventh Student Scientific and Practical Conference "Employment Fair 2023-2024" (19.03.2024, Moscow).
14. The Scientific-practical seminar: Ways to solve urgent issues of industrial poultry farming in the new reality (23.04.2024, Nalchik).
15. The Scientific-practical seminar "Modern effective animal breeding" (23.04.2024).
16. The National Congress of Dairy Producers (28.05-1.06.2024, Republic of Karelia, Petrozavodsk).
17. The Volga Agricultural Congress (22.05.2024, Nizhny Novgorod).
18. The All-Russian Conference on in-cage breeding of fur bearing animals (26-29.06.2024, Tver, Russia).
19. The Ninth All-Russian GMP-conference (20-23.08.2024, Ufa, Republic of Bashkortostan). 10.The Scientific and methodological seminar on the development of kits for laboratory diagnostics of animal diseases (02-05.2024, Novosibirsk).
20. The Scientific and Practical Conference of Students and Young Scientists (08.02.2024, Moscow).

d) Other (Provide website address or link to appropriate information):
15
1 The Fourth session of the Working Group on strengthening the BTWC, Meeting of the BTWC Participating States, training course within the framework of the United Nations Secretary–General's Mechanism (UNSGM) for investigating the alleged use of chemical and biological weapons, to be held in Brindisi (17-31.08.2024, Geneva, Swiss Republic).
2. Meeting of the Working Group and the Meeting of the BTWC Participating States (30.11-06.12.2024, Geneva, Switzerland, Lebedev).
3. Russian-Kyrgyz consultations on biosafety and security (24-26.06.2024, Bishkek, Kyrgyz Republic)
4. Consultations with the Kazakh side within the framework of the work of the Subcommittee on International Cooperation on biosafety of the Government Commission for International Cooperation on Biosafety of the Russian Federation (22.01.2024, Saratov,).
5. Russian-Lao and Russian-Myanmar consultations on biosafety (07-14.09.2024, Lao People's Republic-Democratic Republic of Vientiane,

Republic of the Union of Myanmar, Yangon).
6. Russian-Venezuelan consultations on biosafety (17-21.03.2024, Caracas, Bolivarian Republic of Venezuela).
7. Meeting of the Russian-Chinese Permanent Working Group on cooperation in the field of veterinary supervision, phytosanitary control and food safety (02-07.06.2024, Sanya, China).
8. The specialized training seminar "Vaccines manufactured by the FGBI ARRIAH as an effective method of combating sheep and goat pox and peste des petits ruminants. The FMD situation in the Middle East region" (Zahle, Lebanon, June 26-28, 2024)
9. 3rd Online (Zoom) Meeting for the WOAH avian disease network in East Asia April 2, 2024 WOAH Regional Representative for Asia and the Pacific, Tokyo, Japan
Training
1. The training course on viral bioinformatics and genomics (24-28.06.2024 UK).
2. The training course on "Brain sampling and laboratory diagnosis of rabies in dogs" organized by the WOAH Rabies Reference Laboratory (India)
3. The training webinar on sheep pox and goat pox organized by FAO.
4. The Regional workshop on the use of World Organization for Animal Health standards for safe international trade (14-18.09.2024, Sutomore, R. Montenegro,).
5. The Regional Training Workshop on the new World Animal Health Information System (WAHIS) 24.11-29.11.2024, Paris, France).
6. The Training course for experts of the UN Secretary-General's Mechanism for Investigating the Use of Chemical and Biological Weapons (3-12.05.2024, Kingdom of Thailand, Cham).

11. What have you done in the past year to advance your area of focus, e.g. updated technology?
Methodical guidelines
1. Methodical guidelines for determination of antibody titre against subtype H5 influenza virus with hemagglutination inhibition test in carnivorous animal sera: approved by FGBI "ARRIAH".
2. Methodical guidelines for purification, concentration and isolation of the genome of African swine fever virus and capripoxviruses for whole genome sequencing: approved by FGBI "ARRIAH".
3. Methodical guidelines for molecular and epidemiological clustering of African swine fever virus isolates by subgenotyping: approved by FGBI "ARRIAH".
4. Methodical guidelines for identification of bacteria of the genus Clostridium: approved by FGBI "ARRIAH".
5. Methodical guidelines for planning and conducting monitoring tests for avian influenza and Newcastle disease in wild avifauna and in the poultry population of human settlements: approved by FGBI "ARRIAH" .
6. Methodical guidelines for amplification of type A avian influenza virus genome with RT-PCR to determine its nucleotide sequence using whole genome sequencing methods: approved by FGBI "ARRIAH".
7. Methodical guidelines for planning and conducting monitoring tests aimed at detecting the circulation of the causative agent of sheep pox and goat pox in farmed animal populations and in wild fauna: approved by FGBI "ARRIAH".
8. Methodical guidelines for planning and conducting monitoring tests aimed at detecting the causative agent of peste des petits ruminants in farmed animal populations and in wild fauna: approved by FGBI "ARRIAH".
9. Methodical guidelines for planning and conducting monitoring tests aimed at detecting the circulation of foot-and-mouth disease agent in farmed animal populations and in wild fauna: approved by FGBI "ARRIAH" on.
10. Methodical guidelines for planning laboratory tests and sampling to improve epidemiological surveillance of ASF in the Russian Federation: approved by FGBI "ARRIAH".
11. Methodical guidelines for planning laboratory tests and sampling to improve epidemiological surveillance of CSF in the Russian Federation: approved by FGBI "ARRIAH".
12. Methodical guidelines for cultivation of capripoxviruses for preparation of virus seeds: approved by FGBI "ARRIAH".
13. Methodical guidelines for testing products for their efficacy against infection with sheep pox and/or goat pox: approved by FGBI "ARRIAH".
14. Methodical guidelines for indirect determination of the titre of the culture infectious pancreatic necrosis virus (SRT 19 V strain) in the vaccine production seed and vaccine samples with real time reverse transcription polymerase chain reaction: approved by FGBI "ARRIAH".

15. Methodical guidelines for determination of the index of neutralization of subtype B avian metapneumovirus strains with immune sera: approved by FGBI "ARRIAH".
16. Methodical guidelines for determination of the titre of 50% protective doses (PD50) for inactivated vaccines against avian viral diseases: approved by FGBI "ARRIAH".
17. Methodical guidelines for isolation of canine adenovirus in cell culture: approved by FGBI "ARRIAH".
18. Methodical guidelines for isolation of canine coronavirus enteritis agent in cell culture: approved by FGBI "ARRIAH".
19. Methodical guidelines for isolation of feline calicivirus infection agent in cell culture: approved by FGBI "ARRIAH".
20. Methodical guidelines for concentration of foot-and-mouth disease virus antigen using a tangential filtration unit: approved by FGBI "ARRIAH".
21. Methodical guidelines for detection of the DNA of feline viral rhinotracheitis agent with polymerase chain reaction and horizontal gel electrophoresis: approved by FGBI "ARRIAH".
22. Methodical guidelines for detection of the DNA of canine parvovirus enteritis agent with polymerase chain reaction and horizontal gel electrophoresis: approved by FGBI "ARRIAH".
23. Methodical guidelines for differentiation of a recombinant variant from isolates of genotype I and II African swine fever virus using polymerase chain reaction and nucleotide sequencing: approved by FGBI "ARRIAH".
24. Methodical guidelines for DNA sequence determination by sequencing using a NANOPHORE-05 genetic analyzer: approved by FGBI "ARRIAH".
25. Methodical guidelines for detection of caprine arthritis-encephalitis virus genome with real time polymerase chain reaction: approved by FGBI "ARRIAH".
26. Methodical guidelines for isolation of rabies virus in the mouse neuroblastoma cell culture using 48-well plates: approved by FGBI "ARRIAH".
27. Methodical guidelines for isolation of feline viral rhinotracheitis virus in cell culture: approved by FGBI "ARRIAH".
28. Methodical guidelines for preparation of hyperimmune sera against canine adenovirus to be used for diagnostic purposes: approved by FGBI "ARRIAH".
29. Methodical guidelines for isolation of feline panleukopenia virus in cell culture: approved by FGBI "ARRIAH".
30. Methodical guidelines for detection of the DNA of vaccine RM65 strain of sheep pox virus using polymerase chain reaction with electrophoretic detection of amplification products in agarose gel: approved by FGBI "ARRIAH".
31. Methodical guidelines for detection of the DNAs of vaccine KSGP strain and KSGP-like isolates of lumpy skin disease virus with real time polymerase chain reaction: approved by FGBI "ARRIAH".
32. Methodical guidelines for preparation of hyperimmune sera against canine parvovirus to be used for diagnostic purposes: approved by FGBI "ARRIAH".
33. Methodical guidelines for preparation of hyperimmune sera against canine coronavirus enteritis virus to be used for diagnostic purposes: approved by FGBI "ARRIAH".
34. Methodical guidelines for preparation of hyperimmune sera against feline calicivirus to be used for diagnostic purposes: approved by FGBI "ARRIAH".
35. Methodical guidelines for detection of antibodies against feline panleukopenia virus with microneutralization test: approved by FGBI "ARRIAH".
36. Methodical guidelines for active and passive surveillance in poultry vaccinated against high pathogenicity avian influenza at the commercial establishments: approved by FGBI "ARRIAH".
37. Methodical guidelines for risk identification, assessment and management during import and export operations with animals: approved by FGBI "ARRIAH".
38. Methodical guidelines for collection, storage and transportation of animal biological material samples for laboratory tests aimed at detecting the causative agent of hemorrhagic fever with renal syndrome: approved by FGBI "ARRIAH".
39. Methodical guidelines for collection, storage and transportation of animal biological material samples for laboratory tests aimed at detecting the causative agent of West Nile fever: approved by FGBI "ARRIAH".
40. Methodical guidelines for collection, storage and transportation of animal biological material samples for laboratory tests aimed at detecting the causative agent of tularemia: approved by FGBI "ARRIAH".
41. Methodical guidelines for detection of antibodies against the causative agent of contagious bovine pleuropneumonia with indirect enzyme linked immunosorbent assay in sera from laboratory animals (rabbits): approved by FGBI "ARRIAH".

42. Methodical guidelines for detection of antibodies against Mycoplasma bovis with indirect enzyme linked immunosorbent assay in bovine sera: approved by FGBI "ARRIAH".
43. Methodical guidelines for determination of feline panleukopenia virus infectivity by micromethod in cell culture: approved by FGBI "ARRIAH".
44. Methodical guidelines for preparation of hyperimmune sera against feline viral rhinotracheitis virus to be used for diagnostic purposes: approved by FGBI "ARRIAH".
45. Methodical guidelines for preparation of hyperimmune serum against feline panleukopenia virus to be used for diagnostic purposes: approved by FGBI "ARRIAH".
46. Methodical guidelines for detection of the causative agent of infectious hematopoietic necrosis with real time polymerase chain reaction: approved by FGBI "ARRIAH".
47. Methodical guidelines for determination of rabies virus infectivity by titration in cell culture: approved by FGBI "ARRIAH".
48. Methodical guidelines for roller bottle cultivation of continuous MARC-145 cell culture: approved by FGBI "ARRIAH".
49. Methodical guidelines for laboratory diagnosis of salmonellosis in animals, Salmonella isolation and identification in the environmental objects: approved by FGBI "ARRIAH".
50. Methodical guidelines for preparation of Seneca Valley virus antigen: approved by FGBI "ARRIAH".
51. Methodical guidelines for determination of Seneca Valley virus infectivity titre by microtitration in cell culture: approved by FGBI "ARRIAH".
52. Methodical guidelines for purification and concentration of canine coronavirus enteritis virus: approved by FGBI "ARRIAH".
53. Methodical guidelines for purification and concentration of feline panleukopenia virus: approved by FGBI "ARRIAH".
54. Methodical guidelines for detection of subtype H5 and H7 avian influenza virus RNA with real time RT-PCR: approved by FGBI "ARRIAH".
55. Methodical guidelines for detection of Newcastle disease virus RNA with real time RT-PCR: approved by FGBI "ARRIAH".
56. Methodical guidelines for detection of type A avian influenza virus RNA with real time RT-PCR: approved by FGBI "ARRIAH".
57. Methodical guidelines for detection of the DNA of turkey hemorrhagic enteritis virus with real time PCR: approved by FGBI "ARRIAH".
58. Methodical guidelines for detection of antibodies against subtype H5 avian influenza virus with hemagglutination inhibition test: approved by FGBI "ARRIAH".

Patents for strains
- FMDV (Aphtae epizooticae) O/ARRIAH/Mya-98 strain for production of biologicals for diagnosis and specific prevention of foot-and-mouth disease
- Asia-1/G-V/2006 strain of genotype Asia-1/G-V FMDV (Aphtae epizooticae) for production of biologicals for diagnosis and specific prevention of foot-and-mouth disease
- SAT-2/XIV/2023 strain of genotype SAT-2/XIV FMDV (Aphtae epizooticae) for production of biologicals for diagnosis and specific prevention of foot-and-mouth disease
- Archie strain of Carnivore protoparvovirus 1 of canine parvovirus enteritis for production of biologicals for diagnosis and specific prevention of canine parvovirus enteritis
- Pasteurella multocida PM - B strain for production of biologicals for specific prevention of bovine pasteurellosis (haemorrhagic septicaemia) caused by Pasteurella multocida serogroup B
- Streptococcus dysgalactiae strain for production of biologicals for specific prevention of bovine mastitis
- Newcastle disease virus ARRIAH G7 strain for production of biologicals for diagnosis and specific prevention of Newcastle disease
- SAT-2/North Africa/2012 strain of genotype SAT-2/VII/Ghb-12 FMDV (Aphtae epizooticae) for production of biologicals for diagnosis and specific prevention of foot-and-mouth disease

Patents for methods
- Method for indirect determination of infectivity titre of canine distemper agent in the vaccine production seed with real time reverse transcription amplification assay
- Method for indirect determination of infectivity titre of feline calicivirus in the non-inactivated culture vaccine production seed by the viral RNA ORF1 gene amplification quantification

- *Method for indirect determination of ribonucleoprotein concentration of production Rich strain of coronavirus infection agent in the culture vaccine production seed based on quantification cycle data for amplicons of target coronavirus M gene region*
- *Method for genotyping of isolates and strains of canine parvovirus enteritis agent based on the phylogenetic analysis using original oligonucleotide primers for highly variable region of VP2 gene*
- *Method for differentiation of vaccine ARRIAH strain genome from field isolates of rabies virus with real time polymerase chain reaction involving the analysis of amplicon melting temperature peaks and using SYBR Green asymmetrical dye*
- *Method for storage period extension for production 146S immunogenic component of FMDV antigen*
- *Method for genotyping of feline calicivirus isolates and strains by the phylogenetic analysis using original oligonucleotide primers for highly variable region of ORF2-ORF3*
- *Method for genotyping of vaccine strains of serotype SAT-2 FMDV by the analysis of amplicon melting temperature peaks using fluorescent Eva488 dimer acridine*
- *Method for indirect determination of the number of colony forming units of Mycoplasma arginini with quantitative hybridization fluorescence detection and amplification quantification cycle*
- *Method for differentiation of genome of serotype A FMDV production strains by the analysis of PCR product melting peak temperatures using SYBR Gold intercalating dye*
- *Method for indirect determination of Mycoplasma gallisepticum infectivity titre with real time PCR*
- *Method for differentiation of vaccine RV-97 strain from field isolates of rabies virus based on the maximum of sigmoid function derivative graph during viral cDNA N gene region amplification using SYTO 16 dye*
- *Method for indirect determination of infectivity titre of feline viral rhinotracheitis agent in the vaccine production seed using second-order differential of intersection point of logistic curve of UL35 gene region amplification*
- *Method for indirect determination of the concentration of A antigen of production VGNKI strain of infectious canine hepatitis agent in the culture vaccine production seed based on quantification cycle data during the amplification of target orf25 gene region*
- *Method for differentiation of vaccine Lavr strain of viral rhinotracheitis agent from other strains and field isolates of feline viral rhinotracheitis virus by the analysis of V1 gene PCR product melting temperature graph using SuperNova v605 orange polymer dye*
- *Method for differentiation of vaccine VGNKI strain of adenovirus infection agent from other strains and field isolates by the analysis of PCR product melting peak temperatures using SuperNova v605 tandem fluorescent dye*
- *Method for LSDV gene editing using Overlap-PCR and CRISPR-Cas9 technology*
- *Method for differentiation of vaccine Rich strain from other strains and field isolates of canine coronavirus infection agent by the analysis of the maximum extremes of amplicon melting temperature graphs using SuperNova v428 violet laser dye*

Patents for test kits

- *Real time PCR kit for detection of the DNA of the causative agent of contagious bovine pleuropneumonia*
- *HI diagnostic test kit for detection of antibodies to avian influenza virus and subtyping of hemagglutinating viral agent*
- *Liquid phase ELISA kit for detection of FMDV SP antibodies to A/Tanzania/2013 strain*
- *Liquid phase ELISA kit for detection of FMDV SP antibodies to SAT-2/Eritrea/1998 strain*
- *Liquid phase sandwich ELISA kit for detection of antibodies to FMDV O/Kenya/2017 whole virus particles*
- *Liquid phase sandwich ELISA kit for detection of FMDV SP antibodies to Sat-1/Kenya/2017 strain*
- *Liquid phase ELISA kit for quantification of antibodies to FMDV Genotype O/EA3 146S component*
- *Liquid phase blocking indirect sandwich ELISA kit for detection of FMDV SP antibodies to SAT-2/VII genotype*
- *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*
- *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*
- *Liquid phase blocking indirect sandwich ELISA kit for detection of FMDV SP antibodies to Asia-1/ 2356/14/2018 strain in animal sera*
- *Liquid phase ELISA kit for titration of antibodies to 146S particles of FMDV SAT-2/IV genotype*

Patents for vaccines

- *Culture inactivated adsorbed vaccine against FMD SAT-2/IV*
- *Culture inactivated adsorbed vaccine against FMD SAT-2/XIV*

- *Culture inactivated adsorbed vaccine against FMD, SAT-1/I genotype based on SAT-1/Tanzania/2012 strain*
- *Culture inactivated emulsion vaccine against FMD O/EA-3 genotype based on O/2241/Ethiopia/2011 strain*
- *Culture inactivated emulsion vaccine against FMD O/ME-SA/Ind-2001e genotype based on O/2620/Orenburg/2021 strain*
- *Combined vaccine against canine distemper, canine parvovirus enteritis and canine coronavirus enteritis, canine adenovirus infection and dog rabies*
- *Live culture dry vaccine against porcine reproductive and respiratory syndrome and method for the vaccine production*

12. Additional comments regarding your report: