World Organisation for Animal Health

- -

WOAH Collaborative Centre Reports Activities 2024

This report has been submitted: 27 janvier 2025 15:45

CENTRE INFORMATION

***Title of WOAH Collaborating Centre**	Diagnosis and Control of Bacterial Animal Diseases in Eastern Europe, Central Asia and Transcaucasia
***Address of WOAH Collaborating Centre**	The Russian State Center for Animal Feed and Drug Standardization and Quality (VGNKI)
***Tel:**	+74999410151
***E-mail address:**	m.martynova@vgnki.ru
Website:	https://en.vgnki.ru/
***Name Director of Institute (Responsible Official):**	Evgeniy V. Antonov
***Name (including Title and Position) of Head of the Collaborating Centre (WOAH Contact Point):**	Alexey V. Tretyakov
***Name of the writer:**	Olga Ivanova

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
		A total of 5 085 samples were tested within the

Disease control (true)	State epizootiological monitoring	framework of implementation of the plan for state epizootological monitoring in 2024 in accordance with the order of Rosselkhoznadzor № 1630 dated 22.12.2023 "On laboratory testing as part of the implementation of Rosselkhoznadzor measures for country-level work in 2024 " Testing and (or) examination of products subjected to the state veterinary control (supervision)" (Plan of diagnostic tests (examinations) of goods subject to state veterinary control (supervision) on the territory of the Russian Federation). For brucellosis monitoring, 4 588 sera of cattle and sheep were tested. A significant part of serum samples from animals was negative (99.6%), 19 samples reacted positively. In total, 451 sera from cattle were analyzed for antibodies to 7 serogroups of leptospires for leptospirosis monitoring (17.7% of positive tests, which corresponds to 80 positively reacting samples). A total of 100 samples of pathologic material were subjected to bacteriologic tests for Salmonella spp. detection. Salmonellosis pathogen was detected in 7 samples of pathological material, which corresponds to 7% of the tested samples. According to the obtained results, the rate of salmonellosis incidence in chickens is 7% of detections. However, it should be noted that the order of material sampling for research within the framework of epizootological monitoring and observance of objectivity and impartiality is of paramount importance. Salmonellosis is a disease common for humans and animals, and establishment of the fact of poultry disease entails restrictions in the sale of poultry products from the unfavorable farm. It is necessary to talk about it, because, within the framework of epizootological monitoring, there were instances of identifying positive for salmonellosis samples even on farms, which were considered favorable for salmonellosis. In particular, in 2023, bacteriological examination of 100 samples of pathological material taken from unvaccinated poultry revealed 11 positive samples. As part of the plan for state epizootological monitoring of the territories of the Russian Federation and the identification of risks associated with the emergence and spread of infectious animal diseases, a total of 5 054 PCR tests were carried out to identify pathogens of various infectious agents, including: - Nodular dermatitis of cattle – 1 324 samples of washouts and whole blood samples of

		cattle from 9 subjects of the Russian Federation; - Bovine leukemia - 855 PCR tests of whole blood samples from 6 subjects of the Russian Federation, 1.3% positive results. - Highly pathogenic avian influenza - 336 samples of various biological samples from 9 subjects of the Russian Federation; - Pasteurellosis - 30 biological samples from 1 region; - Aleutian mink disease - 619 samples of various biological samples from 9 subjects of the Russian Federation, 0.6% positive results; - Porcine reproductive and respiratory syndrome (PRRS) - 973 PCR-tests of swine samples from 10 administrative regions of the Russian Federation were carried out, genetic material of the PRRS virus (European type) was detected in samples from 42 unvaccinated animals; - African swine fever - 674 samples of blood serum of domestic pigs from 13 subjects of the Russian Federation were examined; 390 samples of pork products were tested for the presence of DNA of the ASF virus. - Salmonellosis - 243 different biological samples from birds and livestock animals were analyzed, DNA of Salmonella spp. was detected in 2.5%. Also, 2 980 different PCR tests were performed on pets and different species of birds.
Epidemiology, surveillance, risk assessment, (true)	Standardization of control methods of foreign and domestic vaccines against Aujeszky's disease	The main objective of this work is to standardize the control methods for vaccines against Aujeszky's disease. Currently, this disease is of great economic and epizootological importance. Live and inactivated vaccines are used for specific prevention. At present, 18 drugs against Aujeszky's disease from different manufacturers (12 domestic, 6 imported), including associated vaccines, are registered and can be used in the territory of the Russian Federation. Comparison of control methods with each other contributes to the unification of control methods for all vaccines against Aujeszky's disease and the selection of the optimal ones. As part of the R&D for 2022-2024, studies were conducted on live and inactivated vaccines against Aujeszky's disease for the purpose of replacing target animals (pigs) with laboratory animals and biological models during their quality control. The results of the conducted studies indicate the possibility of switching from target animals (pigs) to laboratory animals (guinea pigs) when monitoring the quality of inactivated vaccines against Aujeszky's disease, and replacing rabbits with cell cultures when monitoring the quality of live vaccines. This increases economic efficiency, and also reduces

		labor costs when monitoring the finished product. Based on the results of the studies, drafts of specific pharmacopoeial articles on methods of monitoring live and inactivated vaccines against Aujeszky's disease have been developed for inclusion in the Pharmacopoeia of the Eurasian Economic Union.
Diagnosis, biotechnology and laboratory (true)	Research	In 2024, within the framework of scientific grants obtained by VGNKI, the following methods were developed and implemented: 1. Development of a method for monitoring the immunogenic activity of brucellosis vaccines using cultures of attenuated strains of brucellosis 2. Method for the preparation, storage and control of the properties of reference strains of microorganisms
Veterinary medicinal products (true)	Monitoring of veterinary medicinal products	As part of the state assignment and in accordance with the order of the Rosselkhoznadzor, 713 samples of pharmacological medicinal products for veterinary use were tested for compliance with established quality requirements using destructive analysis methods. Among the samples selected in 2024 and in civil circulation in the Russian Federation, the largest percentage (58.06%) were samples of medicinal products from domestic manufacturers and 41.94% were from foreign manufacturers. Of these, 63.96% are liquid dosage forms, 33.94% are solid dosage forms, and 2.10% are soft dosage forms. During the studies, compliance with established quality requirements was confirmed for 97.62% of samples, non-compliance with established quality requirements was found in 2.38% of samples. The most frequently encountered non-conformity indicators in 2024 were: quantitative determination of substance (55.0%), appearance (description) (10.0%), size (10.0%), determination of fractional composition (10.0%), density (5.0%), loss on drying (5.0%)
Vaccines (true)	Monitoring of vaccines	As part of the vaccine control work, 555 vaccines were tested by PCR for contamination with 14 different foreign viruses and mycoplasmas. Tests of 729 samples of immunobiological medicinal products for compliance with established quality requirements were conducted using destructive analysis methods. Among the samples selected in 2024 and in civil circulation in the Russian Federation, the largest percentage (88.2%) were samples of vaccines from foreign manufacturers and 11.8% were samples of domestic manufacturers.

		During the studies, compliance with the established quality requirements was confirmed for 94.4% of samples, and non-compliance with the established quality requirements was detected in 5.6% of samples. The most common non-compliance indicators in 2024 were: Contamination with foreign viruses - 48.8%, Humidity - 14.6%, Activity - 7.3%, Safety - 7.3%, Appearance - 9.7% and others (12.2%)
		As part of the R&D on veterinary monitoring of bacterial resistance to antimicrobial agents in 2024, 1 407 bacterial isolates were isolated, including: Enterococcus spp. - 613, Escherichia coli - 629, S. aureus - 6, Campylobacter spp. - 10, Listeria monocytogenes - 0, Salmonella spp. - 149. Proportion of multidrug-resistant isolates, interpretation of microbial resistance by EUCAST (simultaneous resistance to three or more classes) - Escherichia coli - 35.7 %, - Salmonella spp. - 31,6%, - Enterococcus spp. - 65,2 % In 2024, more than 1 850 studies of metagenomic samples from environmental objects were conducted by PCR with real-time detection using the developed methods to identify the most frequently occurring resistance genes. In 2024, full genome sequencing of multidrug-resistant isolates was performed: Escherichia coli - 4, Salmonella spp. - 2, draft versions of genome assembly were obtained. Genetic characterization of isolates was performed: identification and genotyping of microorganisms; annotation of genomes; search for resistance genes, mobile genetic elements (plasmids, integrons, transposons, etc.), search for pathogenicity factors. Polyresistant strains of microorganisms with phenotypic resistance confirmed by the relevant genetic determinants of resistance according to the data of full genome sequencing were selected for implementation of the national patent deposit procedure. In 2024, 20 newly isolated and fully characterized strains of microorganisms with multiple antimicrobial resistance (Enterococcus faecium - 2, Enterococcus faecalis - 2, Salmonella spp. - 5, Escherichia coli - 7, Staphylococcus aureus - 4) were deposited into the Collection of Microbial Strains. All results for veterinary antibiotic resistance monitoring are presented on the online platform for analysis, visualization and sharing of antibiotic resistance data - AMRcloud. The data is available at: https://app.amrcloud.net/rus/?

AMR (true)	Studies on antimicrobial resistance for prevention of toxininfections (salmonellosis, campylobacteriosis, escherichiosis)	id=265bc42e9ac32d4c75aac4af8525922d&direct=T With regard to organization and monitoring of antibiotic residues in food raw materials, food products and animal feed, VGNKI carries out state assignment "Testing and/or examination of goods that are under state control (supervision)". In 2024, 10 999 tests were conducted within the framework of this work, of which 71 were positive. Studies to determine the inhibitory properties of the culture fluid of a consortium of probiotic strains of lactobacilli and prebiotic on cultures of E. coli, Salmonella enteritidis, Salmonella thyphimurium and Campylobacter jejuni with multidrug resistance were carried out in order to develop alternative means of prevention of infectious diseases of productive animals. This work was conducted within the framework of the megagrant issued by the Ministry of Education and Science of Russia on the theme: "Creation of means of prevention of socially significant infections of productive animals on the basis of modern methods of nutrigenomics". The results of an in vitro study of antagonistic activity of Bifidobacterium longum Subsp. Longum T1 against antibiotic-resistant strains of E. coli, L. salivarius 7247 and L.fermentum 3872 against antibiotic-resistant strains of Salmonella typhimurium, L.salivarius 7247 and L. crispatus 2029 were presented. Fermentum 3872 against antibiotic resistant strains of Salmonella typhimurium, L. salivarius 7247 and L. crispatus 2029 against antibiotic resistant strains of Campylobacter jejuni. The genomes of the indicated Lactobacillus strains contain genes responsible for the production of enzymes that degrade peptidoglycans and factors that increase the permeability of the outer membrane of Gram-negative bacteria. According to the obtained data, all the indicated strains of lactobacilli showed high antagonistic activity against antibiotic-resistant test cultures of pathogens of socially significant toxicoinfections of productive animals. It was found that the consortium had a pronounced bactericidal effect already after 24 h of cultivation. It was also identified that the number of viable cells of E. coli, S. enteritidis, S. thyphimurium and C. jejuni decreased to an undetectable level (<10 CFU/mL). The results obtained confirm the high inhibitory potential of a consortium of probiotic strains of lactobacilli and prebiotic against Gram-negative bacteria, and form the basis for further studies of their use to control

		the spread of multidrug- resistant bacteria.

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
Patent RU 2 816 522 C1	Method for detection of aminoglycoside resistance genes from the aadA group in bacteria of animal origin by “real-time” PCR	Laboratory Expertise
Database No. 2024620750	Database of virulence genes of Russian Salmonella strains intended for the prevention of salmonellosis in livestock animals	Laboratory Expertise
Database No. 2024622488	Genetic determinants of resistance identified by polymerase chain reaction in different animal species and at places of their housing in 2020-2022	Laboratory Expertise
Database No. 2024621987	Metagenomic analysis of taxonomic composition of the microbiome of the large intestine of young layer birds during their growth with application and withdrawal of antibiotics	Laboratory Expertise
Database No. 2024622355	Profiles of metabolic pathways of layer birds during their growth with application and withdrawal of antibiotics	Laboratory Expertise

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 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
ARRIAH	Vladimir, Russia	Europa	Quality assurance of vaccines for animal diseases, eligible

			for export
ARRIAH + Branch of Freshwater Fisheries of the Federal State Budgetary Scientific Institution "VNIRO"	Russia	Europa	Preclinical and clinical trials of vaccines for fish diseases
National Research Center "Kurchatov Institute"	Russia	Europa	Laboratory control of vaccines with the use of reference attenuated strain of Brucella abortus

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
UN FAO	Rome, Italy	Europe	For establishing monitoring activities for safety and quality of domestic and foreign veterinary medicinal products on the territory of the Russian Federation
IAEA	Vienna, Austria	Europe	Several leading scientists of VGNKI have registered on the IAEA's portal to follow the schedule of upcoming events, Information on some of the planned events have already been submitted to the Director of VGNKI and upper management of Rosselkhonadzor to obtain an approval for participation. These events will be included in the 2025 intenrational collaboration plan of VGNKI

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
Guleichik I.A. - Cand. Sc. Biology, Tsaturyan L.G. – Cand. Vet. Science, Chupakhina N.A. -Cand. Sc. Biology, Kuzmenko M.A.	Department of Bacteriology / Experts on Bacterial medicinal products	pasteurellosis, streptococcosis, bordetellosis, staphylococcosis
Manoyan M.G. - Cand. Vet. Science	Mycology Department / Expert on Mycological medicinal products	mycosis and mycotoxicosis of animals
Zuev Yu.V. - Cand. Vet. Science, Shetsova L.I. Atrokhova S.V. - Cand. Vet. Science, Egorenkova M.I., Emelyanov I.A., Kudesova, A.N., Pugacheva T.N., Rizvanov R.O., Semchenko I.V., Elizbarashvili E.Y. - Cand. Sc. Biology	Virology Department / Experts on Viral medicinal products	specific prevention of viral infections of all kinds of productive and non-productive animals, including wildlife
Rusakov S.V. – Cand. Sc. Biology, Lobova P.S. – Cand. Sc. Biology, Lysenko E.V. – Cand. Vet. Science, Morozova A.V. – Cand. Vet. Science, Napalkova V.V. – Cand. Vet. Science, Prokofieva M.I., Tanirbergenov T.B. – Cand. Sc. Biology, Khristenko V.V. - Cand. Vet. Science	Department of expertise of medicinal products for veterinary use / Experts on pharmacological medicinal products	pharmacological medicinal products for veterinary use

Belyatskaya A.V. (expert certificate № CЭN001777), Poletaeva A.V.	Sector of technical regulation and standardization	regulatory documents for pharmacological medicinal products, examination of instructions for use
Bondarenko V.O. – Doctor of Vet. Science, Muravieva V.B. – Cand. Vet. Science, Sidorenko A.I., Khodkova Yu. S., Khrushchev A.Yu. – Cand. Chem. Science	Department for Control of safe circulation of pharmaceutical medicinal products / Laboratory for quality control of medicinal products	pharmacological medicinal products for veterinary use
GMP inspectors (3+ years of experience)	GMP audits of foreign manufacturers of medicinal veterinary products	The following list contains information on countries where pharmacautical companies and producers of veterinary medicinal products and immunobiological medicinal products are located: Hungary, Brazil, People's Republic of China, Austria, Republic of India, Bulgaria, Spain, Portugal, the Netherlands, France

TOR 7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

To ensure the quality of domestically-produced vaccines (produced by ARRIAH) intended for export, VGNKI provides testings on safety and quality (test parameters:
immunogenicity, sterility, activity, safety for animal health). This service is requested by ARRIAH and is provided on a conntract base

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 : 0

b) Seminars : 0

c) Hands-on training courses: 14

d) Internships (>1 month) : 1

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
C	Diagnosis of infectious diseases of animals using serological methods, including the PCR method	Republic of Belarus, Kyrgyz Republic	40

- -

D	Application of molecular and biological methods of research in veterinary medicine	Republic of Belarus	5

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
Nationally	All-Russian Scientific and Practical Conference of Young Scientists and Specialists	Rospotrebnadzor (Nizhny Novgorod Research Institute of Epidemiology and Microbiology named after. Academician I.N. Blokhina")	2024-04-02	Nizhny Novgorod, Russia	132
Internationally	III International Scientific and Practical Conference "Socially Significant Infections of Livestock Animals: Measures of Prevention and Control"	-	2024-12-12	Moscow, Russia	97
Nationally	12th Congress with international participation "Control and Prevention of Healthcare Associated Infections (HCAI-2024)"	Rospotrebnadzor and the Central Research Institute of Epidemiology in cooperation with the Russian Academy of Sciences, the All-Russian Scientific and Practical Society of Epidemiologists, Microbiologists and Parasitologists	2024-11-27	Moscow, Russia	480
Internationally	XXVI International Congress of the International Association of Microbiologists and Agronomists on Antimicrobial Therapy	-	2024-10-23	Moscow, Russia	367

	and Clinical Microbiology				
Internationally	VII International Congress of Veterinary Pharmacologists and Toxicologists	Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology, Uzbekistan	2024-10-06	Samarkand, Uzbekistan	130
Internationally	4th International Ministerial Conference on Antimicrobial Resistance	Ministry of Health, Kingdom of Saudi Arabia	2024-11-13	Jeddah, Saudi Arabia	300

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:

9

1. Yatsentyuk, S.P., Krasnikova, M.S., Dolinskaya, K.G., Pchelnikov, A. PCR-BASED STUDY ON VIRAL PATHOGENS CIRCULATION AMONG CERVIDS IN THE MOSCOW REGION. Online Journal of Animal and Feed. Research DOI: 10.51227/ojafr.2024.19.

2. Gordeeva, V.D., et al. Quality control of high throughput sequencing data for the study of bacterial isolates. Materials for the III International Scientific and Practical Conference "Socially significant infections of livestock animals: prevention and control measures". Edited by Panin, A.N. Publishing House "Agricultural Technologies", 2024, pp. 107-113.

3. Prasolova, O.V. Deposition of pathogenic strains of microorganisms as a basis for biosafety. Statutory regulation in veterinary medicine, (3), 2024, pp. 39-43.

4. Krylova, E.V., Bogomazova, A.N., Kirsanova, N.A., Putintseva, A.V., Gorbacheva, N.S., Prasolova, O.V., Soltynskaya, I.V., Ivanova, O.E. Development and validation of PCR diagnostic assays for detection of Avibacterium paragallinarum and Ornithobacterium rhinotracheale. Veterinary Sciences, 11 (1), 7, 2024. DOI: 10.3390/vetsci11010007.

5. Makarov, D.A., Pyrsikov, A.S., Ivanova, O.E., Blumenkrantz, D.A., Borunova, S.M., Komarov, A.A., Semenova, E.S. Methods for determining the sensitivity of zoonotic bacteria to antibiotics. Veterinary, zootechnics and biotechnology (accepted in print).

6. Prasolova, O.V., Malik, N.I., Timofeeva, I.A., Kirsanova, N.A., Krylova, E.V., Malik, E.V., Rusanov, I.A., Chupahina, N.A. Metagenomic analysis of biodiversity of the intestinal microbiome of poultry before and after antibiotic load. Veterinary Science Today. Vol. 13 (4), 2024, pp. 373- 381.

7. Prasolova, O.V., Lenev, S.V. Evaluation of the effectiveness of strains of microorganisms in the composition of vaccines for the prevention of salmonellosis in animals. International Veterinary Gazette. № 3, 2024, pp.58-66. DOI: 10.52419/issn2072-2419.2024.3.58.

8. Atrokhova, S.V., Zuev, Yu.V., Shevtsova, L.I., Emelyanov, I.A., Elizbarashvili, E.I., Kudesova, A.N., Egorenkova, M.I. Evaluation for optimization of quality control methods of vaccine against Aujeszky's disease. Biotechnology: scientific research and connection with production. Materials for the international scientific-practical conference. 2024, pp. 126-130. DOI: 10.47804/978-5-89904-038-2-2024.

9. Prasolova, O.V., Malik, N.I., Timofeeva, I.A., Kirsanova, N.A., Krylova, E.V., Malik, E.V., Rusanov, I.A., Chupakhina, N.A. Metagenomic analysis of biodiversity in poultry intestinal microbiome before and after antibiotic drug loading. Veterinary Science Today. Vol. 13 (4), 2024 pp. 373-381.

b) International conferences:

4

1. Krylova, E.V., et al. Use of full-genome sequencing to characterize reference bacterial strains from the collection of VGNKI. Materials for the III International Scientific and Practical Conference "Fundamental and Applied Aspects of Microbiology in Science and Education".

2. Kuzmenko, M.A., Tsaturyan, L.G., Sklyarov, O.D. Improvement of control of specific activity of vaccines against swine erysipelas. In Proceedings: International Scientific and Practical Conference "Scientific bases of production and quality assurance of biological preparations for agro- industrial complex" dedicated to the 55th anniversary of the foundation of the All-Russian Scientific and Technological Institution of biological industry, 2024.
3. Safronova, A.O., Soboleva, N.I., Sheyko, Yu.S. Removal of abdominal hemangiosarcoma in cat as a possible tactic for the treatment of a separate solid tumor as a measure to improve the prognosis and enhance the quality of life of a patient with insufficient funding (clinical case). International Conference "Scientific research of the SCO countries: synergy and integration". Beijing, People's Republic of China, 2024, pp. 175-180. DOI: 10.34660/INF.2024.48.88.391.
4. Pyrsikov, A.S., Soltynskaya, I.V., Krylova, E.V., Kirsanova, N.A., Timofeeva, I.A., Putintseva, A.V., Prasolova, O.V., Gordeeva, V.D., Ivanova, O.E. Whole-genome sequencing of Listeria monocytogenes isolates obtained during antibiotic resistance monitoring. Abstracts of the XXVI International Congress of IACMA on Antimicrobial Therapy and Clinical Microbiology. Vol. 26., Appendix 1, 2024, pp. 47-48.

c) National conferences:
8
1. Soltynskaya, I.V., et al. Development of PCR techniques for comprehensive veterinary monitoring of bacterial resistance to antimicrobials. Scientific achievements in veterinary medicine and animal husbandry: from theory to practice, materials of the Federal State Budgetary Scientific Institution "Ural Federal Agrarian Research Center of the Ural Branch of the Russian Academy of Sciences", 2024, pp. 104-109.
2. Soltynskaya, I.V., et al. Development of screening PCR-methods for detection of genetically modified bacteria in feed additives and medicinal products for animals. Scientific achievements in veterinary medicine and animal husbandry: from theory to practice, materials of the Federal State Budgetary Scientific Institution "Ural Federal Agrarian Research Center of the Ural Branch of the Russian Academy of Sciences", (139 c), 2024, pp. 109-114.
3. Motin, M.S., Myasnikova, O.V., Krylova, E.V. Creation of PCR-system for determining the level of gene expression in laying hens. Materials for the All-Russian Scientific and Practical Conference with International Participation "Week of Youth Science", Moscow State Academy of Veterinary Medicine and Biotechnology named after K.I. Skryabin, (953 c), 2024, pp. 421-424.
4. Pyrsikov, A.S., et al. Molecular, genetic and phenotypic evaluation of bacteria isolated during veterinary resistance monitoring. The All-Russian Scientific and Research Institution of Radiology and Agroecology of the National Research Center "Kurchatov Institute". III International Youth Conference "Genetic and Radiation Technologies in Agriculture", October 23-24, 2024.
5. Bakai, K.A., Safronova, V.A., Priima, A.D., Nesterenko, I.S. Evaluation of the influence of immunization schemes on the sensitivity of enzyme-linked immunosorbent assay for determination of apramycin in food products. Collection of abstracts of the X All-Russian forum of young researchers, 2024, p. 80.
6. Azarnova, T.O., Popova V.A., Lugovaya, I.S. Comparative analysis of lipoperoxidation intensity and state of antioxidant defense in chickens of different directions of productivity under the conditions of industrial incubation with the use of glutathione. Orenburg State Agrarian University, № 4 (108), 2024, pp. 246-252.
7. Popova, V.A., Azarnova, T.O., Lugovaya, I.S. Estimation of economic efficiency of transovarial application of glutathione in incubation of turkey eggs. Models and methods to improve the efficiency of innovative research: Collection of articles on the results of the International Scientific and Practical Conference, Omsk, 2024, pp. 9-12.
8. Soboleva, N.I., Gulyaeva, A.Y., Kis, I.V., Bondarenko, V.O., Vorobyeva, I.A., Shulga, M.A. Reference standards in quality control of medicines for veterinary use. Materials the National Scientific and Practical Conference "Innovative means and methods of prevention and treatment of animal diseases, promising areas of development of veterinary medicine and biotechnology", dedicated to the 165th anniversary of the birth of professor N.D. Dikovsky (submitted for printing).

d) Other (Provide website address or link to appropriate information):
0
-

11. What have you done in the past year to advance your area of focus, e.g. updated technology?

Studies to determine the inhibitory properties of the culture fluid of a consortium of probiotic strains of lactobacilli and prebiotic on cultures of E. coli, Salmonella enteritidis, Salmonella thyphimurium and Campylobacter jejuni with multidrug resistance were carried out in order to develop alternative means of prevention of infectious diseases of productive animals. This work was conducted within the framework of the megagrant issued by the Ministry of Education and Science of Russia on the theme: "Creation of means of prevention of socially significant infections of productive animals on the basis of modern methods of nutrigenomics".
The results of an in vitro study of antagonistic activity of Bifidobacterium longum Subsp. Longum T1 against antibiotic-resistant strains of E. coli, L. salivarius 7247 and L. fermentum 3872 against antibiotic-resistant strains of Salmonella typhimurium, L. salivarius 7247 and L. crispatus 2029 were presented. Fermentum 3872 against antibiotic resistant strains of Salmonella typhimurium, L. salivarius 7247 and L. crispatus 2029 against antibiotic resistant strains of Campylobacter jejuni.
The genomes of the indicated Lactobacillus strains contain genes responsible for the production of enzymes that degrade peptidoglycans and factors that increase the permeability of the outer membrane of Gram-negative bacteria. According to the obtained data, all the indicated strains of lactobacilli showed high antagonistic activity against antibiotic-resistant test cultures of pathogens of socially significant toxicoinfections of productive animals. It was found that the consortium had a pronounced bactericidal effect already after 24 h of cultivation. It was also identified that the number of viable cells of E. coli, S. enteritidis, S. thyphimurium and C. jejuni decreased to an undetectable level (< 10 CFU/mL).
The results obtained confirm the high inhibitory potential of a consortium of probiotic strains of lactobacilli and prebiotic against Gram-negative bacteria, and form the basis for further studies of their use to control the spread of multidrug- resistant bacteria.

12. Additional comments regarding your report:
International cooperation of VGNKI as a WOAH Collaborating Center.
Specialists of the international cooperation department of VGNKI work on strengthening status of VGNKI in international organizations. Together with the leading researchers and relevant authorities, in 2024 specialists participated in the 49th World Small Animal Veterinary Association Congress in China and were invited to the FAO UN Global Conference on Animal Health Innovation, Reference Centres and Vaccines.
Negotiations were held with the delegation of Uzbekistan and Cuba to sign agreements on scientific and technical cooperation. While the Uzbekistani colleagues were interested in working with VGNKI on the topics of quality control of veterinary medicinal products and control of their circulation in the country, the head of the Cuban delegation announced its readiness to cooperate on the topics of genetic engineering and biotechnology in diseases of livestock animals. VGNKI is currently preparing a specialized educational program for veterinarians from Belarus.