

OIE Collaborating Centres Reports Activities

Activities in 2021

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Title of collaborating centre:	Food Safety, Diagnosis and Control
Address of Collaborating Centre:	Ministry of Agriculture and Food Federal Service for Veterinary and Phytosanitary Surveillance 5 Zvenigorodskoye Shosse 123022 Moscow RUSSIA
Tel.:	+7-499 253 14 91
Fax:	
E-mail address:	kanc@vgnki.ru
Website:	www.vgnki.ru
Name of Director of Institute (Responsible Official):	Leonid Kish
Name (including Title and Position) of Head of the Collaborating Centre (formally OIE Contact Point):	Maria Gergel
Name of writer:	Olga Ivanova

ToR: To provide services to the OIE, in particular within the region, in the designated specialty, in support of the implementation of OIE policies and, where required, seek for collaboration with OIE Reference Laboratories

ToR: To identify and maintain existing expertise, in particular within its region

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

Disease control	
Title of activity	Scope
State epizootiological monitoring	<p>A total of 6409 samples were tested within the framework of the plan of the state epizootological monitoring of the Russian Federation territories in compliance with the Order of the Rosselkhoz nadzor No. 1408 dated December 28, 2020 "On laboratory tests within the framework of Rosselkhoz nadzor measures in 2021 to ensure fulfillment of the Agreement on Sanitary and Phytosanitary Measures of the World Trade Organization". A total of 5,228 cattle and sheep sera samples were analyzed to monitor brucellosis. A significant proportion of serum samples from animals tested (96.1 %) were negative, 531 samples reacted doubtfully and 207 samples reacted positively. In total for leptospirosis monitoring 527 bovine sera were analyzed for antibodies to 7 serogroups of leptospira (20,3% of positive tests). A total of 277 samples of pathological material were subjected to bacteriological tests to detect Salmonella spp. Salmonellosis pathogen was detected in 10 samples of pathological material, which is 3.6% of tested samples.</p> <p>As part of risk identification, 690 samples were tested for brucellosis. Studies were performed in serological reactions: agglutination reaction, rose bengal test, immunodiffusion reactions to confirm doubtful and positive results.</p>
Diagnosis, biotechnology and laboratory	
Title of activity	Scope

Diagnosis and surveillance of infectious diseases of animals and birds	<p>In the framework of laboratory diagnosis, a total of 8567 PCR tests were conducted for the detection of various infectious diseases of animals including:</p> <ul style="list-style-type: none"> - Schmallenberg disease - 1622 tests of serum samples from 8 RF administrative regions; - Infectious bovine rhinotracheitis - 385 different biological samples from 10 RF administrative regions. - Bovine leukemia- 339 PCR tests of whole blood samples from 5 RF administrative regions. - Aleutian Mink Disease - 472 tests of different biological samples from 7 RF administrative regions; - Proliferative enteropathy disease of pigs (caused by <i>Lawsonia intracellularis</i>)- 277 tests of different biological samples from 5 RF administrative regions; - Porcine reproductive and respiratory syndrome - 160 PCR tests of pig samples from 4 RF administrative regions.
Diagnosis and surveillance of infectious diseases of animals and birds	<p>2527 samples of different animals' biological material, swabs from the equipment and product surfaces were tested to detect RNA of SARS-COV-2 virus.</p> <p>397 pig products samples were tested for African swine fever virus DNA.</p> <p>318 samples of different biological material of domestic cats were tested for Feline immunodeficiency virus, Feline leukemia virus, Feline Infectious Peritonitis Virus genome.</p> <p>259 PCR tests of biological material were conducted for Chlamydia DNA, 152 tests - for Influenza virus RNA, 198 - for Salmonella sp. DNA.</p> <p>140 frozen bovine semen samples were tested for <i>Mycoplasma bovis</i>, <i>Mycoplasma bovigenitalium</i>, <i>Mycoplasma californicum</i> DNA.</p> <p>12 different PCR diagnostic kits for RNA of influenza A virus detection of 7 domestic producers and 12 African swine fever virus DNA detection kits of 10 producers were compared in terms of specificity, sensitivity, stability.</p>
Research	<p>Identification and typing of isolates of <i>Pasteurella multocida</i> by molecular methods,</p> <ul style="list-style-type: none"> - Screening studies of viral diseases of wild animals (deer, roe deer, elk). - Validation of vaccine quality control methods. - Resistance of pathogenic and opportunistic fungi to antifungal drugs. - Methods for semi-quantitative assessment of bovine DNA, pig DNA and horse DNA content in meat products by PCR with real-time detection; - Methods for detecting tetracycline resistance genes from the tet group in bacteria by real-time detection PCR; - Methods for detecting <i>qnrS</i> and <i>qnrB</i> genes providing resistance to fluoroquinolones in Enterobacteriaceae bacteria by real-time PCR detection.
Food safety	
Title of activity	Scope

State monitoring of food and feed safety	<p>As part of state quality and safety monitoring, the FGBU «VGNI» carries out an annual program of research on chemical contaminants (antibacterial agents, hormonal growth promoters and other animal drugs, heavy metals, persistent organic pollutants, pesticides, mycotoxins, etc.), as well as on microbiological contaminants (<i>Salmonella</i> spp, <i>Listeria</i> spp, Coliforms, etc.) and adulteration (dairy products with non-vegetable fats, meat/fish products with meat of undeclared animal species). Studies are conducted in food products of animal origin (meat, byproducts, milk, fish, honey, meat, and dairy products), feedstuffs, and feed supplements as well as animal biomaterial.</p> <p>In 2021, FGBU «VGNI» performed 22883 tests in 8028 samples, approx. 3 tests per one sample. 80% of the samples were of domestic origin, the rest – of import origin, from Belarus, Brazil, Argentina, China, and other countries. 698 tests were positive (3.1%), and at least one positive test was made in 545 samples, comprising 6.8% of positive samples.</p>
State monitoring of food and feed safety	<p>Feed materials, reindeer offal, and wild-caught fish were the production with the highest percent of positive tests (12%, 10%, and 7%, respectively), followed by honey and poultry. Most part of positive samples in wild-caught fish tested for heavy metals. Reindeer liver and kidneys are contaminated by cadmium, mercury, and dioxins, and the sampling was risk-based. The high percent for honey and poultry may be explained by the zero tolerance for almost all veterinary drug residues in these two types of products in the EAEU legislation.</p> <p>Other xenobiotics, detected above the maximum levels, listed in order of decrease of positive results percent were coccidiostats (in poultry), tryphenylmethane dyes (in aquaculture), quinolones, sulfonamides, anthelmintics, insectoacaricides, nitroimidazoles, tetracyclines, avermectins, nitrofurans, macrolides, pleuromutilins, phenicols, NSAIDs, penicillins and others.</p> <p>The most frequently detected microbiological contaminants were moulds and coliforms (4.5% and 4.0% of positive tests, respectively).</p>
Feed safety	
Title of activity	Scope
State monitoring of food and feed safety	<p>In 2021 FGBU «VGNI» performed 1946 tests in 985 samples of feed materials: compound feed, feed additives, forage grain, soy and sunflower cake, etc. 232 tests were positive (11.9%), and at least one positive test was made in 133 samples, comprising 13.5% of positive samples. The most common type of positive result was adulteration by the undeclared components: DNA of soy, ruminants, pigs/poultry, horses were detected in 88%, 54%, 53%, and 16%, respectively.</p> <p>Exceedance of total bacterial count was the second most common cause of positive results, being detected in 16% of samples. Other positive analyses were GMOs and toxic elements above the MRL.</p>
Other (Name the category)	
Title of activity	Scope

<p>Antimicrobial resistance</p>	<p>In 2021, FGBU VGNI supported the activities stipulated by the National Action Plan to implement the National Antimicrobial Resistance Prevention Strategy in the Russian Federation for the period from 2017 to 2030, including:</p> <ul style="list-style-type: none"> - Prohibiting the use of antimicrobials for any purpose other than treatment; - Liability for illegal use of antimicrobials; - Lists of antimicrobials: <p>A: drugs that are prohibited for use in veterinary medicine (drugs relevant to humane medicine).</p> <p>B: antimicrobial drugs the active substances of which are used in cases that do not prohibit the continuation of antimicrobial drugs' usage in the absence of treatment effectiveness.</p>
<p>Antimicrobial resistance</p>	<p>At the moment, FGBU VGNI is conducting research work "Veterinary monitoring of bacterial resistance to antimicrobial agents and identification of genetic determinants of resistance from environmental objects" (hereinafter - research work) planned for 2020 - 2022. The goal of the research work is the development a monitoring program for the detection of resistant strains of microorganisms and the development of molecular genetic techniques for rapid detection of antibiotic resistance genes, most commonly used in veterinary practice and critical for clinical medicine. The relevance of such techniques is that the currently existing domestic test systems are focused mainly on clinical material.</p> <p>Currently FGBU VGNI has developed molecular genetic techniques to detect the most common resistance genes to fluoroquinolones (plasmid-associated genes qnrS, qnrB) and tetracyclines (tetA, tetM and tetO). The developed methods will allow to conduct the express identification of genetic determinants of resistance in animal food or biomaterial from animals without prior isolation of pure cultures of microorganisms and can be used to monitor the resistance of bacteria to veterinary antimicrobials.</p>
<p>Antimicrobial resistance</p>	<p>As part of the research work, a study of entire bacterial communities - microbiomes (for example, the intestines of animals, environmental objects, etc.) is being carried out, which makes it possible to assess the composition of the pool of resistance genes present in order to obtain a complete picture of their distribution in a particular bacterial population. For this purpose, metagenomic samples are taken from environmental objects (swabs from cages, walls, equipment; fecal samples, bedding, etc.) at livestock and poultry enterprises in various regions of the Russian Federation. To study these samples, a targeted sequencing method is used, based on the enrichment of target genome regions (in this case, a gene fragment encoding bacterial 16S rRNA), followed by massive parallel sequencing.</p> <p>Patents will be issued for the most scientifically interesting isolates. The multidrug-resistant bacterial strains will be deposited in a special section of the "Russian collection of microbial strains" maintained by FGBU VGNI.</p>

Antimicrobial resistance	<p>In the course of monitoring studies for 2021, we isolated a total of 1517 bacterial isolates. Among them, Enterococcus spp - 748 isolates, Escherichia - 391, staphylococci - 161, campylobacter - 14, listeria - 101, salmonella - 102. A total of 965 isolates were tested for sensitivity to antibiotics, of which E. coli - 391, Enterococcus spp - 348, salmonella - 102, Campylobacter - 2, S.aureus - 57, Listeria monocytogenes - 65.</p> <p>Among E. coli bacteria, more than 20% microbiological resistance was found to cefotaxime (22.6%), enrofloxacin (23.3%), ciprofloxacin (25.5%), ampicillin (26%), streptomycin (27%). At the same time, the number of multi-resistant isolates (resistant to at least 3 classes of antibacterial drugs) was 25.6%.</p> <p>Among bacteria of the genus Salmonella, there is a relatively high microbiological resistance (more than 50% of isolates) to ciprofloxacin (70%), streptomycin (55.6%), levofloxacin (73.7%) and gentamicin (74.5%). The total number of multi-resistant isolates was 16.7% of the number of tested isolates.</p>
Antimicrobial resistance	<p>Among the Listeria monocytogenes bacteria, we revealed a slight microbiological resistance to moxifloxacin (4.6%) and erythromycin (4.6%). Multidrug-resistant isolates have not been identified.</p> <p>Among Enterococcus spp, microbiological resistance was demonstrated by 23% of isolates to moxifloxacin, 28.7% to erythromycin, 32% to doxycycline, 32.5% to tetracycline. The total number of multi-resistant isolates was 1.5%.</p> <p>Among S.aureus bacteria, high microbiological resistance (more than 50% of isolates) was found to erythromycin (68%), tetracycline (75%), cefotaxime (77%), clindamycin (82%). The total number of multi-resistant isolates was 73.7% of the number of tested isolates.</p>
Antimicrobial resistance	<p>In accordance with clause 12.2 of the Action Plan for 2019-2024 on the implementation of the Strategy for preventing the spread of antimicrobial resistance in the Russian Federation for the period until 2030, approved by the Order of the Government of the Russian Federation of March 30, 2019 № 604-r, the laboratory of quality and standardization of bacterial drugs FGBU VGNKI carries out research work - "Development of bacteriophage for treatment and prevention of Salmonellosis of piglets". Its aim is to develop a preparation based on bacteriophages, an effective alternative to antibiotics, to prevent, treat and control the spread of salmonellosis in animals. At present, the laboratory staff obtained an experimental highly active bacteriophage on the basis of selected phages and developed methods of quality control; according to the results of further work, a rational scheme of bacteriophage application will be proposed, allowing to protect piglets at high risk of salmonellosis disease.</p>

ToR : To propose or develop methods and procedures that facilitate harmonisation of international standards and guidelines applicable to the designated specialty

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the surveillance and control of animal diseases, food safety or animal welfare

Proposal title	Scope/Content	Applicable area
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Studies quality control	- Patent RU 2 752 895 C1 "Salmonella enterica bacterial strain VGNKI-11 (VKShM-B-848M) as a control strain for phenotypic and molecular studies in the diagnosis of salmonellosis". Ivanova O.E., Lenev S.V., Kramer Yu.N., Gergel M.A., Krylova E.V.	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare
Studies quality control	Patent RU 2 753 412 C1 "Bacterial strain Salmonella enterica as a control strain for phenotypic and molecular studies in the diagnosis of Salmonellosis". Sklyarov O.D., Prasolova O.V., Bogomazova A.N., Sazonkin I.V.	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare
Studies quality control	Patent RU 2 759 396 C1 "Bacterial strain Salmonella enterica (VShM-B-849M) as a control strain for microbiological and molecular genetic investigations in determination of antibiotic resistance". Karabanov S.Y., Soltinskaya I.V., Sukhoedova A.V., Kish L.K., Gordeeva V.D.	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare
Development Russian Interstate Standarts	Interstate standard GOST 34742-2021 Fish food products. Method for determination of polyfluorinated pollutants by high performance liquid chromatography with mass spectrometric detection.	<input type="checkbox"/> Surveillance and control of animal diseases <input checked="" type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare
Development Russian Interstate Standarts	Interstate standard GOST 34743-2021 Fish foodstuffs. Method for the determination of phycotoxins in bivalve molluscs by high performance liquid chromatography with mass spectrometric detection.	<input type="checkbox"/> Surveillance and control of animal diseases <input checked="" type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare

ToR: To establish and maintain a network with other OIE Collaborating Centres designated for the same specialty, and should the need arise, with Collaborating Centres in other disciplines

ToR: To carry out and/or coordinate scientific and technical studies in collaboration with other centres, laboratories or organisations

3. Did your Collaborating Centre maintain a network with other OIE Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
Diagnosis and Control of Animal Diseases for Eastern Europe, Central Asia and Transcaucasia FGBI "ARRIAH"	Vladimir, Russia	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Control and standardization of veterinary biopreparations

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

Yes

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
The French Agency for Veterinary Medicinal Products (ANSES-ANMV)	Javené, France	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Risk assessment and management with regard to veterinary medicinal products

ToR: To place expert consultants at the disposal of the OIE.

5. Did your Collaborating Centre place expert consultants at the disposal of the OIE?

Yes

Name of expert	Kind of consultancy	Subject
Olga Ivanova	Round table of experts as part of the World Antimicrobial Awareness Week, (Together with FAO, WHO, OIE, UNEP)	Antimicrobial resistance

ToR: To provide, within the designated specialty, scientific and technical training to personnel from OIE Member Countries

6. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by the OIE, to personnel from OIE Member Countries?

Yes

- a) Technical visits: 0
- b) Seminars: 0
- c) Hands-on training courses: 0
- 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

Internships	Methods for identification and quantification of GM soybean line MON87751 by PCR with real-time detection of amplification products	Syrian Arab Republic	1
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ToR: To organise and participate in scientific meetings and other activities on behalf of the OIE

7. Did your Collaborating Centre organise or participate in the organisation of scientific meetings on behalf of the OIE?

Yes

National/International	Title of event	Co-organiser	Date (mm/yy)	Location	No. Participants
International	International conference on antibiotic resistance	FAO, WHO, OIE, UNEP	November 18,2021	VGNKI, Moscow	61

ToR: To collect, process, analyse, publish and disseminate data and information relevant to the designated specialty

8. Publication and dissemination of any information within the remit of the mandate given by the OIE that may be useful to Member Countries of the OIE

a) Articles published in peer-reviewed journals: 38

1. Yatsentyuk S.P., Borunova S.M., Gryazneva T.N. Problem of bovine semen contamination by infectious agents of bacterial and viral nature//VETERINARY, ANIMAL SCIENCE AND BIOTECHNOLOGY, 2021 No. 9, pp. 37-39. (In Russ.) DOI: 10.36871/vet.zoo.bio.202109003.
2. Yatsentyuk S.P., Krasnikova M.S., Bryusova M.B. Comparative study of PCR kits for the detection of the influenza virus A RNA//VETERINARY, 2021. No 6. P. 30-33 (In Russ.)
3. M. S. Krasnikova, S.P.Yatsentyuk, M.B.Bryusova, A.D. Kozlova, M.A.Gergel Comparative study of PCR test kits for ASFV DNA detection// VETERINARY SCIENCE TODAY. 2021; 10 (3) pp.209-214. DOI: 10.29326/2304-196X-2021-3-38-209-215
4. Ppbolelova Yu.I., Yatsentyuk S.P., Rudnyaev D.A. Pasteurellaceae prevalence in livestock farms in different regions of Russian Federation// VETERINARY, ZOOTECHNY AND BIOTECHNOLOGY 2021. No 5 pp. 18-25. (In Russ.) DOI: 10.36871/vet.zoo.bio.202105003
5. M.S. Krasnikova, S.P.Yatsentyuk, E.A. Lazareva Effect of disinfectants on SARS-COV-2 RNA detection in swabs from various surfaces// BIOTECHNOLOGY, 2021. V 37., No 4., pp. 78-84. DOI: 10.21519/0234-2758-2021-37-4-78-84
6. M. Abed Alhussen,V.V. Kirpichenko, S.P. Yatsentyuk, A.A. Nesterov, O.P. Byadovskaya, T.V. Zhbanova, A.V. Sprygin Mycoplasma bovis, M. bovis genitalium and M. dispar as bovine pathogens: brief characteristics of the pathogens (review)// AGRICULTURAL BIOLOGY., 2021. V 56., No 2., pp 245-260. (In Russ.) DOI: 10.15389/agrobiology.2021.2.245rus
7. S.P. Yatsentyuk, Yu.I. Poblelova, D.A. Rudnyaev, A.I. Laishevchev, A.V. Kapustin Identification of antibiotic resistance of the cattle pathogen Histophilus somni// AGRICULTURAL BIOLOGY. 2021. V 56., No 2., pp 304-314. (In Russ.) DOI: 10.15389/agrobiology.2021.2.304rus
8. Khishov A.S., Soltynskaya I.V. Krylova E.V., Yatsentyuk S.P., Gergel M.A. Bovine kobuvirus// VETERINARY, 2021. No 6. P. 8-18 (In Russ.) DOI: 10.30896/0042-4846.2021.24.6.08-11

9. Pchel'nikov A.V., Yatsentyuk S.P. Detection of the genetic material of Gammagerpesviruses in livestock farms of the Moscow and Tver regions// VETERINARY, 2021. 7. P. 22-26 (In Russ.) DOI: 10.30896/0042-4846.2021.24.7.22-26
10. Pchel'nikov A.V., Yatsentyuk S.P., Safina E. R. Epizootic situation on IRT of cattle in the territory of the Moscow and Tver regions//VETERINARIYA I KORMLENIE 2021., No 2., pp. 38-41. (In Russ.) DOI: 10.30917/ATT-VK-1814-9588-2021-2-10
11. Kozlova A.D. Yatsentyuk S.P., Rudnyaev D.A., Pobolelova Yu.I. Prevalence of bacteria of the family Pasteurellaceae in cattle of farms of Moscow and Tver regions. VETERINARIYA I KORMLENIE 2021., No 4., pp. 28-31. (In Russ.) DOI: 10.30917/ATT-VK-1814-9588-2021-4-9
12. Makarov DA, Ovcharenko VV, Nebera EA, Kozhushkevich AI, Shelepchikov AA, Turbabina KA, Kalantaenko AM, Bardyugov NS, Gergel MA. Geographical distribution of dioxins, cadmium, and mercury concentrations in reindeer liver, kidneys, and muscle in the Russian Far North. Environ Sci Pollut Res Int. 2021 Sep 25. doi: 10.1007/s11356-021-16310-2.
13. Makarov DA, Nebera EA, Bardyugov NS, Gergel MA. The problem of state control of arsenic content in fishmeal. Quality control of the produce, 9(2021), pp. 41-49 [In Russian].
14. Khishov A.S., Soltynskaya I.V., Krylova E.V., Yatsentyuk S.P., Gergel M.A. Bovine kobuvirus. Veterinary medicine. 2021. – Vol. 6. – p.8-11. DOI:10.30896/0042-4846.2021.24.6.08-11. (In Russ.).
15. Gergel M.A., Zaytseva E.V., Soltynskaya I.V., Krylova E.V., Putintseva A.V., Bogomazova A.N., Vasilevich F.I. Development and validation of a method for semi-quantitative assessment of the content of chicken DNA in meat products. Veterinary medicine. 2021. – Vol. 8. – p.55-59. DOI:10.30896/0042-4846.2021.24.8.55-59. (In Russ.).
16. Gergel M.A., Zaytseva E.V., Soltynskaya I.V., Putintseva A.V., Krylova E.V., Timofeeva I.A., Kirsanova N.A., Akinina T.N., Vasilevich F.I., Bogomazova A.N. Design of duplex real-time PCR for the detection of chicken meat in mixed meat products. International Veterinary Bulletin. 2021. – Vol. 3. – p.113-120. DOI:10.17238/issn2072-2419.2021.3.113. (In Russ.).
17. Prasolova O.V., Soltynskaya I.V., Sukhoedova A.V., Gergel M.A., Kish L.K. Comparative estimation of metrological characteristics of different PCR types for quantitative material assessment in complex matrices on the example of soybeans GM line. E3S Web of Conferences. – EDP Sciences, 2021. – T. 254. – C. 03005. DOI: 10.1051/e3sconf/202125403005.
18. Sklyarov O.D., Babicheva O.V., Bukova N.K. Sap: retrospective and prospects for the creation of a vaccine. Journal "Veterinary" 2020 No. 10. P.3-8. DOI: 10.30896/0042-4846.2020.23.10.03-08
19. Galiakbarova A.A., Pirozhkov M.K. Identification of the relationship between the immunogenic and antigenic activity of the vaccine against animal colibacillosis. Bulletin of the Peoples' Friendship University of Russia. Series: Agronomy and animal husbandry. 2020. V. 15. No. 2. S. 200-209. DOI: 10.22363/2312-797X 2020-15-2-200-209.7
20. Galiakbarova A.A. Comparison of quality control methods for drugs against animal colibacillosis in the State and European Pharmacopoeias, Pharmaceutical business and drug technology. 2020. №2. pp.61-66. DOI:10.33920/med-13
21. P. A. Maiorov, N. A. Feoktissova, V. A. Vasilev, E. S. Malyamova, A. A. Nafeev, A. L. Toygildin, I. A. Tshchigildina, and I. L. Obukhov, Shmorgun B.I. Determination of the main technological parameters of a bioproduct using the bacteriophage Xanthomonas campestris pv/Campestris k134-UTSAV as an example. Journal of Ambient Science. 2020 Volume 07(1) P.7-10
22. Tsaturyan L.G., Sklyarov O.D., Ivanenko A.A., Fedyushin D.V., Kavanosyan V.V., Kuzmenko M.A., Dzhandzhugazyan S.G. Characterization of BACILLUS ANTHRACIS vaccine strains Veterinary Journal 2020 No. 12. P.22-26. DOI: 10.30896/0042-4846.2020.23.12.22-26
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35. Nikiforova Z.N., Orlova Yu.S., Dias Himenes K.A., Smelkova O.I., Ispiryay A.Z., Sysueva S.V., Sarhanova A. A., Bakay K.A. Determination of phosphates in food products and food raw materials by ion-exchange chromatography. Book of abstracts of The National scientific-practical conference Topical issues of biology, biotechnology, veterinary medicine, zootechnics, commodity science and processing of raw materials of animal and vegetable origin. - 2021- P.97-98 (In Russ.)
36. Bakay K.A., Priima A.D., Safronova V.A., Nesterenko I.S. Development of a rapid technique for the determination of tylosin residues by Polarization Fluorescence Immunoassay (FPIA). Book of abstracts of The National scientific-practical conference Topical issues of biology, biotechnology, veterinary medicine, zootechnics, commodity science and processing of raw materials of animal and vegetable origin- 2021- P.67-68 (In Russ.)
37. Bakay K.A., Priima A.D., Safronova V.A., Nesterenko I.S. Development of express-method for the tylosin residues determination in food of animal origin. Book of abstracts of X International Veterinary Congress- Moscow 20-23 April 2021(In Russ.)
38. Nikiforova Z.N. Ispiryay A.Z., Sysueva S.V., Smelkova O.I., Orlova Yu.S., Sokolova D.V., Gremyacheva V.D., Makarov D.A. Method for measuring the mass content of l-carnitine and d-carnitine in feed, compound feed, feed additives and veterinary drugs by high-performance liquid chromatography with fluorescence detection . Russian patent RU 2740535. 2021.

b) International conferences: 25

1. Yatsentyuk S.P. Mycoplasma contamination of bull semen used for artificial insemination AGROEURASIA 2021: X INTERNATIONAL SCIENTIFIC AND PRACTICAL CONFERENCE «CLIMATE, ECOLOGY, AGRICULTURE OF EURASIA»
2. Yatsentyuk S.P. International requirements for the control of aquatic animal diseases VI International Conference A FISH FISH PROCESSING TECHNOLOGIES AND AQUACULTURE. 2021. Saint Petersburg.
3. A. Bogomazova, E. Krylova, A. Putintseva, I. Timofeeva, N. Kirsanova, V. Gordeeva, S. Karabanov, I. Soltynskaya. The PmrA / PmrB mutations do not contribute to colistin resistance in mcr-1-negative *E. coli* isolates isolated from Russian farm animals. *JIOMICS*, 2021, V. 11, I. 1, p.17. Special Issue: Selected abstracts of the IV International Caparica Conference in Antibiotic Resistance (IC2AR 2021), DOI: 10.5584/jiomics.v11i1.200.
4. Krylova E.V., Soltynskaya I.V., Bogomazova A.N., Timofeeva I.A., Kirsanova N.A., Putintseva A.V., Agrinskaya E.P. The prevalence of resistance genes to penicillins, cephalosporins and colistin among productive animals and poultry at agricultural enterprises. Abstract book of the XXIII IACMAC International Congress on Antimicrobial Therapy of Clinical Microbiology. CMAC 2021, 23, Appendix 1, p.23. (In Russ.).
5. Prasolova O.V., Soltynskaya I.V., Ivanova O.E., Sukhoedova A.V., Karabanov S.Yu. Identification of genetic determinants of resistance to tetracyclines and fluoroquinolones in the framework of veterinary monitoring. Materials of the 10th anniversary international scientific conference of students, graduate students and young scientists "Knowledge of the young for the development of veterinary medicine and the country's agro-industrial complex", dedicated to the year of science and technology, St. Petersburg, 2021. - P.293-294. (In Russ.).
6. Prasolova O.V., Kirsanova N.A., Konovalova G.V., Tokar V.V., Malik N.I. Application of whole genome sequencing methods in the structure of epizootological monitoring of multiresistant pathogens. Materials of the X Anniversary International Scientific Conference of students, graduate students and young scientists "Knowledge of the young for the development of veterinary medicine and the country's agro-industrial complex", dedicated to the year of science and technology, St. Petersburg, 2021. - P.294-295. (In Russ.).

7. Semenova A.A., Yushina Yu.K., Grudistova M.A., Zaiko E.V., Ivanova O.E. Study of microbial communities of meat processing enterprises elibrary id: 46544525 doi: 10.47501/978-5-6044060 -1-4 New technologies in medicine, biology, pharmacology and ecology. Proceedings of the International Conference NT + M&Ec`2020. Spring session <https://elibrary.ru/item.asp?id=46544525>
8. 10TH ANNIVERSARY INTERNATIONAL VETERINARY CONGRESS, RUSSIA, Moscow, Congress Center "Technopolis" April 20-23, 2021 "ONE WORLD - ONE HEALTH". Report on the topic: "Veterinary monitoring of antimicrobial resistance in the Russian Federation."
9. Meat and poultry summit (Moscow, Crocus City Hall) May 17-19, 2021 Ivanova O.E. Report: "Veterinary monitoring of antimicrobial resistance in the Russian Federation"
10. International scientific and practical conference within the framework of the Global Food Forum-2021: National dialogue "Veterinary and sanitary food safety - the basis of human health", May 20, 2021. Scriabin. Ivanova O.E. Report: "Veterinary monitoring of antimicrobial resistance in the Russian Federation"
11. Participation at the round table of experts held on 16.10.2021 as part of the World Antimicrobial Awareness Week, (Together with FAO, WHO, OIE, UNEP), Moscow 2021. Ivanova O.E., Report: "Veterinary Monitoring antimicrobial resistance in the Russian Federation".
12. International conference on antibiotic resistance at the VGNKI, Moscow, November 18, 2021 (Together with FAO, WHO, OIE, UNEP). Report: Veterinary monitoring of bacterial resistance to antimicrobial drugs and identification of genetic determinants of resistance from environmental objects.
13. International Conference "Livestock of the Future - 2021", Moscow, Skolkovo, 30.11.2021 Ivanova O.E. Report: "State strategy for the use of antibiotics in animal husbandry."
14. S.Yatsentyuk, A. Kozlova, M.Krasnikova Detection of bovine herpes viruses in cattle semen used for artificial insemination EUROPEAN ASSOCIATION OF VETERINARY LABORATORY DIAGNOSTICIANS VIRTUAL MEETING 2021
15. Pobolelova Yu.I., Kozlova A.D., Rudnyaev D.A., Yatsentyuk S.P. Detection of antibiotic resistance genes of *Histophilus somni* MOLECULAR DIAGNOSTICS 2021, Moscow
16. Lazareva E.A., Kozlova A.D., Gorbacheva N.S., Yatsentyuk S.P. Identification of mycoplasmosis in frozen bovine semen. MOLECULAR DIAGNOSTICS 2021, Moscow
17. Kozlova A.D., Rudnyaev D.A., Bryusova M.B., Yatsentyuk S.P. Development of a method for detecting *Histophilus somni* DNA by RT PCR. MOLECULAR DIAGNOSTICS 2021, Moscow
18. Pobolelova Yu.I., Kozlova A.D., Yatsentyuk S.P., Bryusova M.B. Validation of the PCR method for detection and identification of animal pasterellosis, MOLECULAR DIAGNOSTICS 2021, Moscow
19. Yatsentyuk S.P., Krasnikova M.S., Kozlova A.D., Bryusova M.B. Study of quality parameters of domestic diagnostic pcr kits for detecting ASF virus DNA. MOLECULAR DIAGNOSTICS 2021, Moscow
20. Krasnikova M.S., Kozlova A.D., Bryusova M.B., Yatsentyuk S.P. Comparative study of PCR kits for detection of RNA of the influenza virus A. MOLECULAR DIAGNOSTICS 2021, Moscow
21. Soltynskaya I.V., Krylova E.V., Bogomazova A.N., Gordeeva V.D., Timofeeva I.A., Karabanov S.Yu., Sukhoedova A.V., Kirsanova N.A., Makarov D.A., Gergel M.A. Analysis of the prevalence of the MCR-1 colistin resistance gene in *Escherichia coli* isolates isolated as part of veterinary monitoring of antibiotic resistance. Molecular diagnostics. Sat. Proceedings / coll. ed. - T. 2 - Tambov: LLC firm "Yulis", 2021. - P.221. (In Russ.).
22. Bogomazova A.N., Gordeeva V.D., Makarov D.A., Karabanov S.Yu., Sukhoedova A.V., Krylova E.V., Soltynskaya I.V., Ivanova O.E. Genome-wide analysis of antibiotic resistance of *Enterococcus* spp isolated from reindeer in Russia. Molecular diagnostics. Sat. Proceedings / coll. ed. - T. 2 - Tambov: LLC firm "Yulis", 2021. - P.218. (In Russ.).
23. Sukhoedova A.V., Krylova E.V., Timofeeva I.A., Kirsanova N.A., Pleskacheva M.A., Soltynskaya I.V. Molecular genetic methods for diagnosing hereditary diseases in cattle. Molecular diagnostics. Sat. Proceedings / coll. ed. - T. 2 - Tambov: LLC firm "Yulis", 2021. - P.222. (In Russ.).

24. Prasolova O.V., Timofeeva I.A., Ivanova O.E., Gritsyuk V.A. Genome-wide sequencing analysis of *Campylobacter* spp. with multidrug resistance. *Molecular diagnostics. Sat. Proceedings / coll. ed. - T. 1 - Tambov: LLC firm "Yulis", 2021. - P.163. (In Russ.)*.

25. Prasolova O.V., Gergel M.A. The problem of interpretation of quantitative studies of determining the content of GMOs in feed using the PCR-RT method. *Molecular diagnostics. Sat. Proceedings / coll. ed. - T. 1 - Tambov: LLC firm "Yulis", 2021. - P.244. (In Russ.)*.

c) National conferences: 6

1. Kozlova A.D., Krasnikova M.S., Kozhushkevich K.A., Yatsentyuk S.P. PCR assay for SARS-COV-2 RNA detection in pets *SCIENTIFIC ACHIEVEMENTS OF GENETICS AND BIOTECHNOLOGY IN VETERINARY MEDICINE AND LIVESTOCK, 2021, Ekaterinburg*

2. Rudnyaev D.A., Yatsentyuk S.P. Kapustin A.V., Gryazneva T.N. Detection of genetic determinants of resistance to antibiotics of *Histophilus somni* *CURRENT ISSUES OF BIOLOGY, BIOTECHNOLOGY, VETERINARY, ZOOTECHNY, COMMODITY AND PROCESSING OF ANIMAL AND VEGETABLE RAW MATERIALS, 2021, Moscow*

3. Gergel M.A., Zaitseva E.V., Soltynskaya I.V., Krylova E.V., Bogomazova A.N., Putintseva A.V., Prasolova O.V., Borunova S.M. Development of a method for semi-quantitative assessment of the content of chicken DNA in meat products. *Proceedings of the national scientific-practical conference "Actual issues of biology, biotechnology, veterinary medicine, animal science, commodity science and processing of raw materials of animal and vegetable origin", Moscow, MVA im. K.I. Scriabin, 04/01/2021, part II: Sat. Art., 2021. - S. 75-76. (In Russ.)*.

4. Malik E.V., Malenkova L.A., Malik N.I., Rusanov I.A., Prasolova O.V. Phenotyping of strains and isolates of *P. multocida* by capsular groups in hyaluronidase and acriflavin tests. *Materials of the national scientific-practical conference "Actual issues of biology, biotechnology, veterinary medicine, animal science, commodity science and processing of raw materials of animal and vegetable origin", part II: coll. Art., 2021. - S. 49-50. (In Russ.)*.

5. Malak Alkubesi, Akinina T.N., Prasolova O.V. Development of a method for identifying the GM soybean line 87751 based on a polymerase chain reaction with the detection of amplification products in the "real time" mode. *Proceedings of the national scientific-practical conference "Actual issues of biology, biotechnology, veterinary medicine, animal science, commodity science and processing of raw materials of animal and vegetable origin", Moscow, MVA im. K.I. Scriabin, 04/01/2021, part II: Sat. Art., 2021. - S. 4-6. (In Russ.)*

6. Prasolova O.V., Gergel M.A., Soltynskaya I.V., Sklyarov O.D., Babicheva A.V. The use of whole genome sequencing of industrial strains of *Brucella* spp. to identify genetic markers for the purpose of strain differentiation. *Infectious diseases in the modern world: evolution, current and future threats: Proceedings of the XIII Annual All-Russian Congress on Infectious Diseases named after Academician V.I. Pokrovsky, Moscow, May 24-26, 2021 Medical Marketing Agency, 2021. - P.134. (In Russ.)*.

d) Other

(Provide website address or link to appropriate information): 15

Trainings

Title of activity:

Organized training course for veterinary specialists on the "PCR diagnostics of infectious animal diseases"

6 webinars were held on the problem of coronavirus infection caused by SARS-COV-2, sampling for diagnostic studies.

2 advanced training courses on the topic: "Antibiotic resistance. Measures to contain it" were held with the use of distance learning technologies.

6 practical advanced training courses on detection, identification and quantification of GMOs in products of plant origin, feed, seeds and planting material were held.

9. Additional comments regarding your report:

No