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Информация о владельце:

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Должность: Ректор

Дата подписания: 20.07.2024 14:35:20

Уникальный программный ключ:

ca953a0120d891083f939675078ef1a989dae18a

Федеральное государственное автономное образовательное учреждение высшего образования

«Российский университет дружбы народов имени Патриса Лумумбы»

Аграрно-технологический институт

(наименование основного учебного подразделения (ОУП) – разработчика программы)

Утверждена на заседании  
ученого совета ОУП  
протокол от 19 декабря 2023 г.  
№ 2021-08/06

## ПРОГРАММА ПОДГОТОВКИ НАУЧНЫХ И НАУЧНО-ПЕДАГОГИЧЕСКИХ КАДРОВ В АСПИРАНТУРЕ

Научная специальность:

**4.2.1. Патология животных, морфология, физиология, фармакология и токсикология**

(код и наименование научной специальности)

Направленность (профиль):

**Animal Pathology, Morphology, Physiology, Pharmacology and Toxicology / Патология  
животных, морфология, физиология, фармакология и токсикология (англ.)**

(наименование программы подготовки научных и научно-педагогических кадров)

Программа подготовки научных и научно-педагогических кадров в аспирантуре  
разработана в соответствии с требованиями:

**СУТ РУДН**, утвержденных приказом ректора от 09 марта 2022 г. № 139

Срок освоения программы подготовки научных и научно-педагогических кадров в  
аспирантуре:

**3 года**

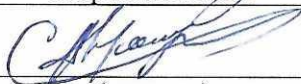
(очная форма обучения)

Сведения об особенностях реализации программы: реализуется на английском языке.

СОГЛАСОВАНО:

Руководитель программы


Карамян А. С.



(подпись)

Начальник УОП

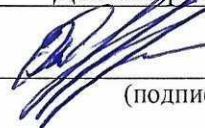
Воробьева А. А.



(подпись)

Директор института

Довлетярова Э. А.



(подпись)

Начальник ДАД

Борисова А. С.



(подпись)

2024 г.

## **1. PURPOSE OF THE POSTGRADUATE PROGRAM**

*The goal is to prepare and defend a dissertation for the degree of candidate of sciences in the field of veterinary medicine, specialty 4.2.1. Animal pathology, morphology, physiology, pharmacology and toxicology.*

## **2. BRIEF SUMMARY OF THE PROGRAM**

The program of training of scientific and scientific-pedagogical personnel in postgraduate studies in the specialty 4.2.1. Animal pathology, morphology, physiology, pharmacology and toxicology have been developed and implemented in the Department of Veterinary Medicine of ATI RUDN University.

Research areas are:

1. Topography and structure of the body and organs of animals under conditions of norm and variability in phylo- and ontogenesis, under the influence of exogenous and endogenous factors and in the experiment.

2. Study and description of patterns of morphogenesis, cyto-, histo- and organogenesis, differentiation of cells and intracellular structures, intercellular interactions, regenerative processes in the individual development, their adaptation to the effects of exogenous and endogenous factors in animals at the macro-, micro- and ultrastructural level using morphological and other research methods.

3. Mechanisms of nervous and humoral regulation, genetic, molecular, biochemical processes that determine the dynamics and interaction of physiological processes and functions in animals.

4. Patterns and mechanisms for maintaining the constancy of the internal environment of the body, physiological processes and functions of the body systems and individual organs of animals, the physiological mechanisms of their adaptation to various factors, the behavior and reactions of the body to their action in normal conditions, in pathological conditions and in experiment.

5. The study of higher nervous activity and behavior of animals in the norm, experiment and under the influence of endogenous and exogenous factors.

6. Etiological factors, pathogenetic mechanisms of disease development, typical pathological processes and reactions of the animal organism to the impact of a pathogenic factor, mechanisms of outcomes and complications of the disease. Development of etio- and pathogenetic therapy, taking into account the interaction of therapeutic factors with the protective and adaptive mechanisms of the body.

7. General pathological processes in animals, pathogenetic mechanisms and pathomorphological changes in diseases of various etiologies. Methods for establishing the underlying disease, its complications in concomitant pathological processes and their role in thanatogenesis.

8. Fundamental and applied aspects of veterinary nosology and pathology, clinical veterinary medicine, methods and technologies of examination, general, laboratory and instrumental diagnostics of animal diseases.

9. Oncological diseases of animals, etiology, onco- and pathogenesis, morphology of tumors, development of methods for diagnosis, treatment and prevention.

10. Experimental and clinical therapy of animals, improvement and optimization of general and private medicinal, physiotherapy and other non-drug methods of influence.

11. Prevention of the occurrence of animal diseases, optimization of therapeutic measures, prediction of disease outcomes and evaluation of the effectiveness of schemes and methods of prevention and treatment.

12. Patterns associated with pregnancy and fetal development in normal and under the influence of exogenous and endogenous factors, childbirth. Methods for diagnosing pregnancy and its correction in animals.

13. Morphofunctional status and its relationship with reproductive ability of animals. Reproductive function in animals, embryo transplantation. Veterinary gynecology and andrology.

14. Morphological and functional features of the mammary gland of animals in normal and pathological conditions, methods of diagnosis, therapy and prevention.

15. Reconstructive surgery, transplantation of organs and tissues, development of surgical methods and techniques in animals in experiment and in pathologies. Military field surgery of animals.

16. Local and general anesthesia. Methods of anesthesia, transfusions and blood transfusions.

17. Development and improvement of methods of resuscitation and intensive care of animals.

18. Screening, pharmaceutical development and study of the mechanisms of action of drugs, feed additives and disinfectants on animals, organs and tissues, cell cultures.

19. Toxicological evaluation of drugs and their forms in the conditions of acute and chronic experiments, specific types of toxicity and manifestations of undesirable side effects.

20. The study of pharmacodynamics and pharmacokinetics of drugs, their compatibility. Establish relationships between chemical structure, doses, concentrations and efficacy. Bioequivalence study.

21. Study of the clinical efficacy of drugs, biologically active drugs, feed additives and their combinations in various diseases, taking into account the species, age and other characteristics of animals.

22. Determination of the content of medicinal substances, mycotoxins, xenobiotics and other toxicants in feed, water, food, organs and tissues of animals. Methods of diagnosis, prevention and therapy of intoxications.

23. Development of research methods during a forensic veterinary examination of the death of an animal. Thanatogenesis, pathoanatomical changes and the establishment of causes of death and causal relationships. Identification of animal corpses and their parts, within the framework of a forensic veterinary

examination. Methods of forensic veterinary examination, the study of physical evidence in forensic veterinary practice. Study of iatrogenic pathology.

Types of professional activity for which graduates who have mastered the postgraduate program are preparing 4.2.1. Animal pathology, morphology, physiology, pharmacology and toxicology:

A) scientific activity in the field of veterinary medicine;

B) scientific and pedagogical activity in educational programs of higher education in the field of: morphology, physiology, biochemistry, immunology, biomathematics, ecology, ethology, pharmacology and toxicology, pathology, oncology, diagnostics and therapy of internal non-communicable animal diseases, obstetrics and gynecology, surgery, veterinary sanitation, veterinary and sanitary examination, organization of veterinary business.

### **3. THE NEED OF THE LABOR MARKET FOR GRADUATES WHO HAVE COMPLETED THE POSTGRADUATE PROGRAM**

An analysis of the state and trends in the development of scientific and scientific-pedagogical activities in the field of veterinary medicine shows that the formation and management of the knowledge base in this area is an important factor in increasing the potential and competitiveness of domestic educational institutions of higher education, research organizations and innovation-active companies engaged in scientific research and educational activities.

- Modern educational, research and other innovation-active organizations are in dire need of professional veterinarians who are able to carry out teaching and research work, capable of developing scientific and pedagogical activities, possessing relevant technologies and skills.

- Demand for PhD Graduates 4.2.1. Animal pathology, morphology, physiology, pharmacology and toxicology were determined by the program leader based on an analysis of the Russian labor market for scientific and scientific-pedagogical workers in the field of veterinary medicine.

### **4. REQUIREMENTS FOR APPLICANTS APPLYING TO THE PROGRAM**

Potential entrant of the training program for scientific and scientific-pedagogical personnel in the specialty 4.2.1. Animal pathology, morphology, physiology, pharmacology and toxicology must have a higher professional education in the field of veterinary medicine not lower than the level of specialist and master's degree. Must be prepared for activities that require in-depth scientific and scientific-pedagogical training and possess the following competencies:

1. General professional competencies:

readiness for communication in oral and written forms in Russian and foreign languages to solve the problems of professional activity; willingness to lead a team in the field of their professional activity, tolerantly perceiving social, ethnic, confessional and cultural differences; the ability to make organizational and managerial decisions;

## 2. Professional competencies:

- in the field of scientific activity: the ability to generalize and critically evaluate the results obtained by domestic and foreign researchers, identify promising areas, draw up a research program; the ability to substantiate the relevance, theoretical and practical significance of the chosen topic of scientific research; the ability to conduct independent research in accordance with the developed program; the ability to present the results of the study to the scientific community in the form of an article or report;

- in the field of pedagogical activity: the ability to apply modern methods and techniques of teaching disciplines in professional educational organizations, educational institutions of higher education, additional professional education; the ability to develop curricula, programs and appropriate methodological support for teaching disciplines in professional educational organizations, educational institutions of higher education, additional professional education.

## **5. STRUCTURE AND SCOPE OF THE PROGRAM FOR TRAINING SCIENTIFIC AND SCIENTIFIC-PEDAGOGICAL PERSONNEL IN POSTGRADUATE STUDIES**

The structure and volume of the postgraduate program - the period of development is 3 years in full-time.

<b>No.</b>	<b>Structure of the Postgraduate Program</b>	<b>The scope of the PhD program in z.e.</b>
1. Scientific component		150
1.1.	Scientific activity aimed at preparing a dissertation for defense	126
1.2.	Preparation of publications and (or) applications for patents for inventions, utility models, industrial designs, selection achievements, certificates of state registration of programs for electronic computers, databases, topologies of integrated circuits provided for in paragraph four of clause 5 of federal state requirements	18
1.3.	Intermediate certification by stages of scientific research	6
2. Educational component		24
2.1.	Disciplines (modules)	13
2.2.	Practices, including teaching practice	5
2.3.	Intermediate certification in disciplines (modules) and practice, including pedagogical	6

3. Final certification	6
Scope of the Postgraduate Program	180

## **6. CHARACTERISTICS OF THE PROFESSIONAL ACTIVITY OF A GRADUATE**

6.1. The field of professional activity of graduates who have mastered the postgraduate program includes productive and unproductive animal husbandry, the preservation and provision of animal health and welfare, the diagnosis and prevention of diseases of various etiologies, the treatment of animals, forensic veterinary examination, veterinary and sanitary examination, state veterinary supervision, development and circulation medicines for animals, ensuring the sanitary safety of world trade in animals and products of animal and vegetable origin.

6.2. The objects of professional activity of graduates who have mastered the postgraduate program are agricultural, domestic, laboratory, exotic, cellular, wild and game animals, birds, bees, fish, hydrobionts and other objects of sea and river fishing, cell cultures, raw materials and finished products of animal and vegetable origin, beekeeping products, feed and feed additives, places of their preparation and storage, biologically active substances, medicines and biological preparations, technological lines for the production of drugs, food and feed, premises for keeping animals, pastures, reservoirs, slaughterhouses, cattle burial grounds, vehicles for transporting animals, as well as enterprises for the production, processing, storage, sale of food and feed of animal and vegetable origin; technological processes of production and processing of livestock products.

6.3. Types of professional activities for which graduates who have mastered the postgraduate program are preparing 4.2.1. Animal pathology, morphology, physiology, pharmacology and toxicology, based on the needs of the labor market, research and material and technical resources of RUDN University:

- scientific activity in the field of economics in the field of veterinary medicine:
- scientific and pedagogical activity in educational programs of higher education in the direction 36.00.00 "Veterinary and animal husbandry":
  - specialist in specialties: 36.05.01 "Veterinary";
  - bachelor's degree in the field of study: 36.03.01 "Veterinary and sanitary examination";
  - magistracy in the direction of preparation: 36.04.01 "Veterinary and sanitary examination".

6.4. Tasks of professional activity for which the graduates who have mastered the postgraduate program are preparing 4.2.1. Animal pathology, morphology, physiology, pharmacology and toxicology:

- scientific activity in the field of morphology, physiology, biochemistry, immunology, biomathematics, ecology, ethology, parasitology, pharmacology and toxicology, pathology, oncology, diagnostics and therapy of internal non-communicable diseases of animals, obstetrics and gynecology, surgery,

veterinary sanitation, veterinary and sanitary expertise, organization of veterinary business.

- scientific and pedagogical activity in the field of morphology, physiology, biochemistry, immunology, biomathematics, ecology, ethology, parasitology, pharmacology and toxicology, pathology, oncology, diagnostics and therapy of internal non-communicable animal diseases, obstetrics and gynecology, surgery, veterinary sanitation, veterinary -sanitary examination, organization of veterinary affairs.

## **7. LOCATION OF THE STUDY PROGRAM**

7.1. The postgraduate program is implemented by the Russian University of Peoples' Friendship.

7.2. Information about the planned bases for conducting practices and (or) performing scientific research

<b>Practice and research</b>	<b>Practice base</b>
Pedagogical practice (stationary)	RUDN University, Moscow
Scientific research (stationary)	RUDN University, Moscow

## **8. FEATURES OF THE IMPLEMENTATION OF THE POSTGRADUATE PROGRAM**

8.1. The postgraduate program is implemented with elements of e-learning of distance learning technologies of TUIS RUDN University.

8.2. The language of implementation of the PhD program is English.

8.3. The program does not provide for the training of people with disabilities and people with disabilities.