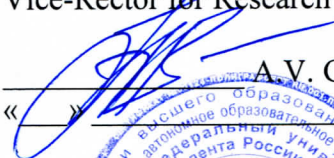


MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION
Federal State Autonomous Educational Institution of
Higher Education
"Ural Federal University named after the First President of Russia B.N. Yeltsin"
Institute of Natural Sciences and Mathematics

APPROVED BY
Vice-Rector for Research


A.V. Germanenko
2023 г.

**PROGRAM OF RESEARCH AND ACADEMIC STAFF TRAINING
-IN POSTGRADUATE (PhD) COURSE**



Description

BIOTECHNOLOGY

List of information about the program	Credentials
Postgraduate Program Biotechnology	Code PP 1.5.6.
Group of specialties Biological Sciences	Код 1.5.
Federal State requirements (FSR)	Order of the Ministry of Science and Higher Education of the Russian Federation № 951 dated 20.10.2021.
Self-approved requirements (SAR)	Order "On the implementation of the "Requirements for the development and implementation of training programs for scientific and scientific-pedagogical personnel in the graduate school of UrFU" dated 31.03.2022 №315/03

Description of the research and academic staff training program in postgraduate (PhD) course (hereinafter referred to as the PhD program) is compiled by:

№	Full name	Academic degree, Academic title	Position	Affiliation
1	Alexander A. Ermoshin	PhD, Docent	Associate Professor	Department of Experimental Biology and Biotechnology of the Institute of Natural Sciences and Mathematics
2	Irina S. Kiseleva	PhD, Docent	Head of Department	Department of Experimental Biology and Biotechnology of the Institute of Natural Sciences and Mathematics
3	Maria V. Ulitko	PhD	Associate Professor	Department of Biology and Fundamental Medicine of the Institute of Natural Sciences and Mathematics

Recommended by:

Educational and methodological board of Institute of Natural Sciences and Mathematics

Head of the Educational and Methodological board of
the Institute of Natural Sciences and Mathematics
Record № 1 от 19.01.2023 г.

E. S. Buyanova

Agreed by:

Head of academic staff training department

E.A. Butrina

1. GENERAL CHARACTERISTIC

1.1. The characteristics of the PhD program was developed on the basis of Self-approved requirements (SUT) and the order of the rector “On the introduction of the “Requirements for the development and realization of training programs for scientific and scientific-pedagogical personnel in UrFU PhD studies” No. 315/03 dated March 31, 2022, describes general requirements for the results of mastering the program, corresponding to the characteristics of the future professional activity of the graduate, as well as the structure and conditions for the realization of the PhD program.

1.2. List of regulatory documents:

- Federal Law of December 29, 2012 No. 273-FZ “On Education in the Russian Federation” (as amended and supplemented);

- Federal Law of July 27, 2006 No. 149-FZ “On Information, Information Technologies and Information Protection” (as amended and supplemented);

- Federal Law of July 27, 2006 No. 152-FZ “On Personal Data” (as amended and supplemented);

- Federal Law of August 23, 1996 No. 127-FZ “On Science and State Scientific and Technical Policy” (as amended and supplemented);

- Decree of the Government of the Russian Federation of November 30, 2021 No. 2122 “On approval of the Regulations on the training of scientific and scientific-pedagogical personnel in graduate school (adjuncture)”;

- Order of the Ministry of Science and Higher Education of the Russian Federation dated February 24, 2021 No. 118 “On approval of the nomenclature of scientific specialties in which academic degrees are awarded, and amendments to the Regulations on the Council for the Defense of Dissertations for the Candidate of Sciences, for the degree of doctor of science, approved by order of the Ministry of Education and Science of the Russian Federation dated November 10, 2017 No. 1093”;

- Order of the Ministry of Science and Higher Education of the Russian Federation dated October 20, 2021 No. 951 “On approval of federal state requirements for the structure of training programs for scientific and scientific-pedagogical personnel in graduate school (adjuncture), the conditions for their realization, the timing of the development of these programs, taking into account various forms of education, educational technologies and features of certain categories of graduate students (adjuncts)”;

- Regulations on the award of academic degrees in the Federal Autonomous State Educational Institution of Higher Education "Ural Federal University named after the first President of Russia B.N. Yeltsin” (Order No. 590/03 dated July 19, 2021);

- Charter of UrFU and other legal, local regulations of the university.

1.3. The PhD program is coordinated with employers - social partners:

- Ekaterinburg research institution of viral infections (ENIIVI of Rospotrebnadzor)

- OOO Medsintez;

- Institute of Immunology and Physiology, Ural Branch of the Russian Academy of Sciences

- Institute of Organic Synthesis named after I. Postovsky Ural Branch of the Russian Academy of Sciences;

1.4. Form of study and term of mastering the PhD program: full-time, 4 years.

1.5. The volume of the PhD program: 240 credits.

1.6. The main users of the PhD program are:

- employers;

- graduate students;

- teaching staff;

- administration and collective governing bodies of the university.

1.7. Requirements for applicants:

Determined by the Rules for Admission to UrFU.

2. CHARACTERISTICS OF PROFESSIONAL ACTIVITIES

Field of professional activities of a graduate, types and tasks of professional activity according to scientific specialty 1.6.5. "Biotechnology", agreed with representatives of employers - social partners.

2.1. Field of professional activities of a graduate

PhD graduates will be able to carry out professional activities in the field of:

- Research activity in the institutes of the Russian Academy of Sciences, research organizations of the biomedical, microbiological, agricultural profile, universities and other educational institutions;
- Healthcare (in clinical diagnostic centers and laboratories, genetic centers and laboratories, in the area of development and quality control of new drugs and diagnostic kits, in the field of preclinical studies;
- Cross-cutting types of professional activity in the industry (in the field of scientific and technical, experimental design and realization of biotechnological products for various purposes, in the field of metrology, attestation and technical control of product quality).

A PhD graduate will be able to carry out professional activities in other areas and (or) areas of professional activity, provided that the level of their education and the acquired competencies meet the requirements for the qualification of an employee.

2.2. Objects of professional activities of a graduate

The objects of professional activity are living systems, and biotechnologies based on their use to obtain a wide range of traditional and innovative products

2.3. Types and tasks of professional activity

A PhD student is preparing for the following types and tasks of professional activity (Table 1).

Table 1. List of types of professional activity and their corresponding professional tasks

№ III	Types of professional activity (TPA)	Professional tasks (PT)
1	Scientific research activity	<ul style="list-style-type: none"> • study of scientific and technical information, domestic and foreign experience on the subject of research; • mastering the methods of fundamental and applied biotechnology; • carrying out experiments in the field of biotechnology, description and analysis of results; • processing and analysis of data using modern digital technologies; • preparation reports and publications dealing with research area; • drawing up reports on the results of research; • protect intellectual property and the results of research and development
2	Scientific and innovative activity	<ul style="list-style-type: none"> • application the results of research in innovative activities;
3	Organizational activity and management	<ul style="list-style-type: none"> • participation in the organization of research in a biotechnological laboratory, organization and providing of seminars and conferences.

3. THE STRUCTURE OF THE PROGRAM

3.1. The structure of the PhD program includes three components: research and educational components, final attestation (table 2).

Table 2. Components of a PhD program

№	Components of a PhD program	Form of evaluation
1	<i>Research component</i>	
1.1	Research activity aimed at preparing a thesis for the degree of Candidate of Sciences (hereinafter referred to as the dissertation) for defense	Intermediate attestation of research
1.2	Preparation of publications that present the main research results of the dissertation in peer-reviewed publications, equivalent publications indexed in the international databases Web of Science and Scopus and international databases determined in accordance with the recommendation of the Higher Attestation Commission under the Ministry of Science and Higher Education of the Russian Federation, as well as in publications indexed in the science metric database Russian Science Citation Index (RSCI) and (or) applications for patents for inventions, utility models, breeding achievements, etc.	
2	<i>Educational component</i>	
2.1	Disciplines aimed at preparing and passing candidate exams: - History and philosophy of science; - Foreign language; - Biotechnology.	Intermediate attestation based on the results of studying disciplines and practice
2.2	Elective courses (one at the choice of a graduate student): – Science metrics and modern information and communication technologies in science	
2.3	Optional courses: - Ecobiotechnology; - Plant Biotechnology; - Bioinformatics.	
2.4	Research activities and practice: – Research practice; – Research activities and thesis preparation.	
3	<i>Final attestation</i>	Evaluation of the dissertation for compliance with the requirements of the Federal Law of August 23, 1996 No. 127-ФЗ “On Science and State Scientific and Technical Policy”

4. CONDITIONS FOR THE REALIZATION OF THE PhD PROGRAM

The conditions for the realization of the PhD program include system-wide requirements, material and technical and educational and methodological support, staffing and financial conditions for the realization of the PhD program, as well as the applied mechanisms for assessing the quality of educational activities and preparing students for the PhD program.

4.1. General conditions for the realization of the PhD program

The University has on the right of ownership or other legal basis the material and technical support for carrying out both research activities - it has scientific potential in the field of biotechnology in which the PhD program is being realized, it has a research infrastructure that allows performing fundamental, experimental and applied research, and educational activities - in terms of mastering courses by a PhD student, passing practice, intermediate and final attestation in accordance with the curriculum.

Each PhD student during the entire period of study is provided with individual unlimited access to the electronic information and educational environment of the university from any point where there is access to the information and telecommunications network "Internet" (hereinafter referred to as the "Internet"), both on the territory of the university and outside of it.

The electronic information and educational environment of the university provides:

- access to curricula, programs of courses and practices, electronic educational publications and electronic educational resources recommended in programs;
- formation of an electronic portfolio of the student;
- electronic service "Personal account of a PhD student".

In the case of the distance learning technologies, the electronic information and educational environment additionally provides:

- fixing the course of the educational process, the results of intermediate attestation and the results of realization of the PhD program;
- all types of training sessions, assessing learning outcomes;
- interaction between participants in the educational process, including synchronous and (or) asynchronous interaction through the Internet.

The functioning of the electronic information and educational environment is ensured by appropriate means of information and communication technologies and the qualifications of employees using and supporting it. The functioning of the electronic information and educational environment complies with the legislation of the Russian Federation.

When a PhD program is realized in network form, the requirements for the PhD program are provided by material, technical and educational resources provided by organizations participating in the PhD program in a network form.

If a PhD program or part (parts) of it is realized in other organizations, departments or structural subdivisions, the required conditions are provided by a combination of resources of these organizations.

4.2. Material, technical, educational and methodological support of the educational process

The auditoriums and laboratories for research, and all types of classes for PhD program, are provided with equipment and teaching aids, necessary for all courses (modules) and research.

Rooms for self-study are equipped with computers and Internet access and provide the access to electronic information and educational environment of the University.

The University is provided with the necessary set of licensed software for courses, research and is annually renewal if necessary.

Educational process is provided by ex-books and other training manuals based on at least one item in printed and (or) electronic form, sufficient for mastering the educational program, for each PhD student in each discipline included in the individual plan. PhD students are provided with access (remote access) to modern educational and methodological materials, library collections and library and reference systems, professional databases and information reference systems, the list of which is determined in the programs of courses and is periodically renewal if necessary.

Access to the electronic library system:

Zonal Scientific Library <http://lib.urfu.ru/>

Electronic catalog <http://lib.urfu.ru/course/view.php?id=76>

Resources <http://lib.urfu.ru/course/view.php?id=169>

EBSCOhost electronic resources: <https://search.ebscohost.com/>

ScienceDirect electronic resources: <https://www.sciencedirect.com/>

Web of Science electronic resources: <http://apps.webofknowledge.com>

Scopus electronic resources: <https://www.scopus.com/>

Electronic resources of the RSCI (elibrary.ru): <https://elibrary.ru/>

Elsevier Electronic Resources: <http://reaxys.org>.

4.3. Staff, participating in a PhD program

The realization of the postgraduate program is provided by the researchers and pedagogical staff of the university, as well as persons on the terms of a civil law contract. The qualifications of teaching staff must correspond to the qualification requirements specified in the qualification handbooks and (or) professional standards (if any).

The qualitative and quantitative requirements for teaching staff: at least 60% of the number of full-time scientific and (or) scientific and pedagogical workers participating in the realization of the PhD program must have an academic degree (including an academic degree obtained in a foreign state and recognized in the Russian Federation) and (or) an academic title (including an academic title obtained in a foreign state and recognized in the Russian Federation).

The supervisor of a postgraduate student must have a D.Sc. degree, or in some cases, by decision of the University, a PhD degree, or an academic degree obtained in a foreign state, recognized in the Russian Federation; carry out scientific activities in the relevant area of research within the scientific specialty 1.5.6. "Biotechnology" for the last 3 years; has publications in peer-reviewed domestic or foreign journals and books; participate delivering reports at Russian and international conferences over the past 3 years.

Requirements for the qualification of the teaching staff involved in the realization of the courses implemented in English are established in the educational program, taking into account clause 6.3 "Regulations on the assignment of the status of "English-speaking" and the implementation of training programs for scientific and pedagogical personnel in graduate school in English" (Order No. 811/03 dated October 15, 2018).

The scientific consultant must have a D.Sc. or Ph.D. degree or a foreign academic degree recognized in the Russian Federation.

4.4. Financial support of the PhD program

Financial support for PhD program should be carried out in an amount not lower than the basic standard costs established by the Ministry of Science and Higher Education of the Russian Federation for the support government services in the field of education for the level of education and training direction, taking into account the correction coefficients, the specifics of educational programs in accordance with the Methodology for determining the standard costs for government services for the realization of educational programs of higher education in specialties (areas of training) and enlarged groups of specialties (areas of training), approved by Order of the Ministry of Education and Science of the Russian Federation No. 1272 dated 30.10.2015 (registered by the Ministry of Justice of the Russian Federation on 30.11.2015, registration No. 39898).

4.5. Mechanisms for assessing the quality of education and training for PhD students

The quality of educational activities and training of PhD students is determined within the framework of the internal evaluation system, as well as the external evaluation system on a voluntary basis.

In order to improve the postgraduate program, the university, conduct regular internal assessment of the quality of education, involving employers and their associations, other legal entities and (or) individuals, including university teachers.

Within the framework of the internal system for assessing the quality of educational activities and training, PhD students are given the opportunity to assess the conditions, content, organization and quality of the educational process in general and in individual disciplines, practice and research.

External assessment of the quality of educational activities and training of students in the PhD program can be carried out within the framework of professional and public accreditation conducted by employers, their associations, as well as organizations authorized by them, including foreign organizations, or authorized national professional and public organizations that are part of international structures, in order to recognize the quality and level of training of graduates who have mastered the PhD program that meet the requirements of professional standards (if any), the requirements of the labor market for specialists of the relevant profile.

5. EVALUATION OF THE ACHIEVEMENT OF RESULTS OF THE PHD PROGRAM

The planned results of the development of the PhD educational program are formed step by step within the framework of disciplines and practice in accordance with the curriculum. Evaluation of the results of mastering the program by a graduate student is carried out in the form of intermediate and final attestation.

Intermediate attestation is carried out in the form of candidate exams, tests in elective and optional courses, research practice, research activities and preparation of a dissertation for the degree of candidate of sciences. The form and procedure for conducting intermediate attestation for candidate exams are established by the Ministry of Science and Higher Education of the Russian Federation, for other disciplines - by local regulations of the university.

The final attestation is carried out in the form of an assessment of the dissertation for its compliance with the criteria established in accordance with the Federal Law of August 23, 1996 No. 127-FZ "On Science and State Scientific and Technical Policy", and the requirements for a dissertation for the degree of Candidate of Sciences established by the Regulations on the award of academic degrees in UrFU.

6. REGISTRATION LIST OF CHANGES IN THE PhD PROGRAM

№ of the list of changes	Minute of the meeting of educational and methodological board of the institute	The date of meeting	Total number of pages	Signature of the Head of the educational program