



MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION
Federal State Autonomous Educational Institution of Higher Education
"Far Eastern Federal University"
(FEFU)



**Basic professional educational program of
higher education
in the direction of preparation
04/06/01 Biology
Molecular and Cell Biology Program
Level of higher education
Academic Master**

**Vladivostok
2019**

Content

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Annotation (general description) of the main professional educational program “Molecular and Cellular Biology” in the direction of preparation 06.04.01 Biology

Qualification - Master

The standard development period is 2 years.

Labor input - 120 units.

Master's program

1. General Provisions

The main professional educational program (MPEP) of the magistracy implemented by the Federal State Autonomous Educational Institution of Higher Education "Far Eastern Federal University" in the direction of preparation 06.04.01 Biology, the master's program "Molecular and Cellular Biology" is a system of documents developed and approved by a higher educational institution with taking into account labor market requirements on the basis of the educational standard of higher education, we independently establish about FEFU.

MPEP is a complex of basic characteristics of education (volume, content, planned results), organizational and pedagogical conditions, certification forms, which are presented in the form of annotations (general characteristics) of the educational program, curriculum, calendar curriculum, work programs of disciplines (modules), practice programs, educational and methodological complexes of disciplines, including assessment tools and teaching materials, research programs and state final certification, as well as information about the actual resource support of the educational process.

In accordance with the selected activities and the requirements for the results of the development of the educational program, this BEP is an academic master's program.

System-wide requirements for the implementation of the master's program are determined in accordance with the educational standard of higher education, independently established by the FEFU in the direction of preparation 06.04.01 Biology, approved by order of the rector dated 04.04.2016 No. 12-13-592.

The implementation of the OPOP is ensured by scientific and pedagogical personnel with a basic education corresponding to the profile of the discipline taught, whose share in the total number of scientific and pedagogical workers is 84.21%.

The share of teachers with a scientific degree and (or) academic rank and the share of scientific and pedagogical workers from among the leaders and employees of organizations whose activities are related to the focus of the implemented program in the total number of employees implementing the program is 94.74%

and meets the requirements of the educational standard Higher education, independently established by FEFU in the direction of training 04/06/01 Biology, approved by order of the rector 04.04.2016 No. 12-13-592.

General management of the content of the master's program 06.04.01 Biology is carried out by Candidate of Biological Sciences, Director of the Department of Medical Biology and Biotechnology of the School of Biomedicine V.V. Kumeyko.

MPEP is provided with educational and methodological documentation presented in the FEFU local network in all disciplines, including independent work of students. Each student during the entire period of study is provided with unlimited access to the electronic library systems and the electronic information and educational environment of the FEFU, hosted on the BlackBoard learning platform. The FEFU electronic information and educational environment provides: the formation of the student's electronic portfolio, including the preservation of the student's work, reviews and ratings for these works by any participants in the educational process; interaction between participants in the educational process, including synchronous and asynchronous interaction through the Internet. The functioning of the electronic information and educational environment is provided by appropriate means of information and communication technologies and the qualifications of the employees who use and support it. The library fund is equipped with printed and electronic publications of basic and additional literature published over the past five to ten years.

Workplaces for people with disabilities are equipped with braille displays and printers; portable devices for reading flat-printed texts, scanning and reading machines with a video enlarger with the ability to control color spectra; magnifying electronic magnifiers and ultrasonic markers.

The educational process is provided with appropriate fire-fighting requirements by equipped classrooms and laboratories designed for lecture, laboratory and practical classes in the curriculum disciplines, as well as rooms for independent work of students. Through the Wi-Fi network, covering all educational buildings, students have access to the Internet. All classrooms designed for lecture classes are equipped with multimedia systems, projectors, presentation screens.

All FEFU buildings are designed with accessibility for people with disabilities. In order to ensure special conditions for the training of disabled people in FEFU, all buildings are equipped with ramps, elevators, lifts, specialized places, equipped with toilets, information and navigation support signs.

2. The regulatory framework for the development of the MPEP

The normative legal base for the development of the BEP is:

- Federal Law of December 29, 2012 No. 273-ФЗ “On Education in the Russian Federation”;
- Regulatory documents of the Ministry of Education and Science of the Russian Federation, the Federal Service for Supervision of Education and Science;
- Order of the Ministry of Education and Science of the Russian Federation dated 05.04.2017 No. 301 “On approval of the Procedure for the organization and implementation of educational activities in educational programs of higher education - undergraduate programs, specialty programs, master's programs”;
- Order of the Ministry of Education and Science of Russia dated June 29, 2015 No. 636 “On approval of the Procedure for conducting the state final certification on higher education educational programs - undergraduate programs, specialty programs and master's programs”;
- Order of the Ministry of Education and Science of Russia dated November 27, 2015 No. 1383 “On approval of the Regulation on the practice of students mastering the basic professional educational programs of higher education”
- The educational standard, independently established by FEFU in the direction of training in the direction of preparation 06.04.01 Biology, approved by the decision of the Academic Council of FEFU, protocol No. 01-16 of 01/28/2016, enforced by order of the rector of the FEFU of 04.04.2016 No. 12-13-592 ;
- Order of the Ministry of Education and Science of the Russian Federation dated November 9, 2015 No. 1309 “On approval of the procedure for ensuring accessibility conditions for facilities for disabled people and the services provided in the field of education, as well as providing them with the necessary assistance”;
- Order of the Ministry of Education and Science of the Russian Federation of December 2, 2015 No. 1399 “On approval of the action plan (“ road map ”) of the Ministry of Education and Science of the Russian Federation to increase the values of indicators of accessibility for disabled people of facilities and the services provided for them in the field of education”;
- FEFU Charter, approved by order of the Ministry of Education and Science of the Russian Federation dated May 6, 2016 No. 522;
- internal regulations and documents of FEFU.

3. The goals and objectives of the main professional educational program

In accordance with the recommendations of the Ministry of Education and Science of Russia and the requirements of the OS of the Far Eastern Federal University on 04/06/01 Biology, the main goal of the educational program is:

- high-quality training of highly qualified personnel in the field of “Biological Sciences” for research, design, organizational, managerial, and production and technological professional activities through the development of

the program profile by students and the mastery of general cultural, general professional and professional competencies that contribute to the social mobility of graduates and their sustainability in the job market.

The main goal is achieved by solving the following tasks:

1) ensuring a system of quality training in this area and implementing OS HE, taking into account the development of science, culture, economy, engineering, technology and the social sphere;

2) ensuring systemic interaction of the faculty with employers, the business community for the development of cultural, professional, social and personal competencies and assessing the quality of training of graduates;

3) the formation and development on this basis of students of professional knowledge, skills in accordance with the requirements of OS HE in this area of training;

4) improving the knowledge of a foreign language, focused on professional activities;

5) improving philosophical education, including oriented to professional activities;

6) an in-depth study of the theoretical and methodological foundations of molecular and cellular biology, methods for studying the structure and properties of biomacromolecules, methods for studying the morphology and functioning of cells and tissues, molecular modeling methods, bioinformatics methods and resources, modern approaches to synthetic biology and genetic engineering, studying the structure and functioning genomes of organisms, methods of cell and tissue bioengineering;

7) gaining knowledge in the field of the legislative framework for the development and practical application of molecular and cellular technologies, the practical application of modern achievements of molecular and cellular biology in the field of healthcare, the medical and pharmaceutical industries, including in the light of Law No. 180-Φ3 “On Biomedical Cellular Products” ;

8) the formation of skills of independent research and teaching activities;

9) the formation of skills in the independent solution of such professional tasks as: the development of technical specifications for the design and manufacture of non-standard equipment and technological equipment of enterprises; development of technical documentation and technical regulations; organization of product quality control in accordance with the requirements of sanitary, hygienic norms and rules; organization of control over compliance with environmental cleanliness of production processes; development of new types of products and technologies in accordance with the state policy of the Russian Federation on the basis of scientific research; participation in the preparation of

design and technological documentation taking into account international experience; organization and conduct of research in the field of biomedicine.

4. The complexity of the main professional educational program

Education under the master's program "Molecular and Cellular Biology" can be carried out in full-time, part-time education. The volume of the master's program is 120 credits (hereinafter - z.e.) regardless of the form of study, educational technologies used, the implementation of the master's program using the online form, the implementation of the master's program according to an individual curriculum, including accelerated learning.

Duration of graduate education:

- full-time education, including holidays provided after passing the state final certification, regardless of the educational technologies used, is 2 years. The volume of the master's program in full-time education, implemented in one academic year, is 60 hours. e .;

- in full-time or part-time education, regardless of the educational technologies used, it increases by at least 3 months and no more than six months (at the discretion of the organization), compared with the period of receiving full-time education. The volume of the master's program in part-time education implemented for one academic year is determined by the organization independently;

- when training according to an individual curriculum, regardless of the form of training, the organization independently establishes it, but no more than the period of education established for the corresponding form of training. When training according to an individual plan of persons with disabilities, the organization has the right to extend the term by no more than six months compared with the period established for the corresponding form of training. The volume of the master's program for one academic year when studying according to an individual plan, regardless of the form of study, is not more than 75 z.u. The specific term of education and the volume of the master's program, implemented in one academic year, in full-time and part-time study, as well as according to an individual curriculum, are determined by the organization independently within the deadlines established by the OS of the FEFU in this area of training.

When implementing the master's program, e-learning and distance learning technologies are used. When teaching people with disabilities, e-learning and distance education technologies should provide for the possibility of receiving and transmitting information in accessible forms for them.

The implementation of the master's program is possible using a network form.

5. MPEP Structure

The structure of the master's program includes an obligatory part (basic) and a part formed by participants in educational relations (optional). This provides the opportunity to implement modules and master's courses with different specializations within the same profile.

The Master's program "Molecular and Cellular Biology" consists of the following blocks:

Block 1 "Disciplines (modules)" 54-66 c.u., which includes disciplines (modules) related to the basic part of the program 21-30 c.u. and disciplines (modules) related to its variable part 24-45.

Block 2 "Practice", which fully applies to the variable part of the program - 45-60 c.u.

Block 3 "State final certification" in full 6–9 c.e. refers to the basic part of the program and ends with the assignment of qualifications specified in the list of specialties and areas of higher education preparation, approved by the Ministry of Education and Science of the Russian Federation.

6. Area and objects of professional activity

The field of professional activity of graduates who have mastered the master's program includes the study of wildlife and its laws, the use of biological systems for economic and medical purposes, and nature conservation.

The objects of professional activity of graduates who have mastered the master's program are:

- biological systems of various levels of organization;
- processes of their vital activity and evolution;
- biological, bioengineering, biomedical, environmental technologies, biological expertise and monitoring, assessment and restoration of territorial biological resources.

7. Types of professional activity. Professional tasks

- 1) Master in the direction of preparation 06.04.01 Biology, master's program "Molecular and Cellular Biology" is preparing for the following types of professional activity:
- 2) - research activities.
- 3) - research and production activities
- 4) - project activities.
- 5) - organizational and managerial activities.
- 6) - teaching activities (in the prescribed manner in accordance with the qualifications).

7) Mastering the program of the academic master's program “Molecular and Cellular Biology” is aimed at the readiness of the graduate to solve the following professional problems in research activities:

- 1) independent choice and justification of the goal, organization and conduct of scientific research on an urgent problem in accordance with the focus (profile) of the master's program;
- 2) the formulation of new tasks arising in the course of the study;
- 3) selection, justification and development of methods adequate to the goal;
- 4) the development of new theories, models, research methods, the development of new methodological approaches;
- 5) work with scientific information using new technologies;
- 6) processing and critical evaluation of research results;
- 7) preparation and execution of scientific publications, reports, patents and reports, holding seminars, conferences.

Mastering the program of the academic master's program “Molecular and Cellular Biology” is aimed at the readiness of the graduate to solve the following professional problems in scientific and production activities:

- 1) independent planning and conducting field, laboratory and applied work, control of biotechnological processes in accordance with the orientation (profile) of the master's program;
- 2) the development and participation in the creation of new biological and biomedical technologies;
- 3) the organization of the production of biological material;
- 4) planning and implementation of environmental measures;
- 5) planning and conducting biomonitoring and environmental assessment;
- 6) restoration and cultivation of biological resources;
- 7) the collection and analysis of available information on the problem using modern methods of automated collection and processing of information;
- 8) processing, critical analysis of the data;
- 9) preparation and publication of reviews, patents, articles.

Mastering the program of the academic master's program “Molecular and Cellular Biology” is aimed at the readiness of the graduate to solve the following professional problems in project activities:

- 1) preparation and publication of scientific and technical reports and projects;

- 2) preparation of normative methodological documents;
- 3) preparation of design documentation;
- 4) preparation of scientific and technical projects.

Mastering the program of the academic master's program "Molecular and Cellular Biology" is aimed at the readiness of the graduate to solve the following professional tasks in organizational and managerial activities:

- 1) planning and implementation of laboratory and field studies in accordance with the orientation (profile) of the master's program;
- 2) planning and implementation of measures for nature protection, biomonitoring, environmental impact assessment, assessment and restoration of biological resources;
- 3) planning and implementation of seminars and conferences;
- 4) preparation of materials for publication;
- 5) patent work;
- 6) preparation of budget and reporting documentation.

Mastering the program of the academic master's program "Molecular and Cellular Biology" is aimed at the readiness of the graduate to solve the following professional tasks in pedagogical activity:

- 1) the implementation of pedagogical activities in the design and implementation of the educational process in general educational organizations and educational organizations of higher education in accordance with the direction of training;
- 2) the implementation of pedagogical activities in professional educational organizations in accordance with the direction of training.

8. Planned results of the MPEP development

As a result of mastering the master's program, the graduate develops general cultural, general professional and professional competencies.

A graduate who has mastered the master's program should have the following general cultural competencies (CK):

- the ability to creatively adapt the achievements of foreign science, technology and education to domestic practice, a high degree of professional mobility (CK-1);
- willingness to show leadership qualities and organize the work of the team, own effective technologies for solving professional problems (CK-2);
- the ability to work in project multidisciplinary teams, including as a leader (CK-3);

- the ability to quickly master new subject areas, identify contradictions, problems and develop alternative solutions to them (CK-4);
- the ability to generate ideas in scientific and professional activities (CK-5);
- the ability to conduct a scientific discussion, knowledge of the standards of the scientific style of the modern Russian language (CK-6);
- ability to free scientific and professional communication in a foreign language environment (CK-7);
- ability to abstract thinking, analysis, synthesis (CK-8);
- willingness to act in non-standard situations, to bear social and ethical responsibility for decisions made (CK-9);
- readiness for self-development, self-realization, use of creative potential (CK-10).

A graduate who has mastered the master's program should have the following general professional competencies (GPC):

- willingness to communicate verbally and in writing in the state language of the Russian Federation and in a foreign language for solving problems of professional activity (GPC-1);
- willingness to lead the team in the field of their professional activities, tolerantly perceiving social, ethnic, religious and cultural differences (GPC-2);
- willingness to use fundamental biological concepts in the field of professional activity for the formulation and solution of new problems (GPC-3);
- the ability to independently analyze the available information, identify fundamental problems, set a task and carry out field, laboratory biological research in solving specific problems using modern equipment and computing tools, be responsible for the quality of work and the scientific reliability of the results (GPC-4);
- the ability to apply knowledge of the history and methodology of biological sciences to solve fundamental professional problems (GPC-5);
- the ability to use knowledge of the fundamentals of the doctrine of the biosphere, an understanding of modern biosphere processes for a systematic assessment of geopolitical phenomena and forecast the consequences - implementation - of socially significant projects (GPC-6);
- willingness to creatively apply modern computer technology in the collection, storage, processing, analysis and transfer of biological information to solve professional problems (GPC-7);
- the ability to use the philosophical concepts of natural science for the formation of a scientific worldview (GPC-8);

- the ability to professionally compile, present and report the results of research and production and technological work in accordance with approved forms (GPC-9).

A graduate who has mastered the graduate program “Molecular and Cellular Biology” must have the following professional competencies in accordance with the type of activity:

research activities:

- the ability to creatively use in scientific and industrial-technological activities the knowledge of fundamental and applied sections of disciplines (modules) that determine the orientation (profile) of the master's program (PC-1);

- the ability to plan and implement professional events (in accordance with the orientation (profile) of the master's program) (PC-2);

- the ability to apply the methodological foundations of designing, performing field and laboratory biological, environmental studies, using modern equipment and computer systems (in accordance with the focus (profile) of the master's program) (PC-3);

- the ability to generate new ideas and methodological solutions (PC-4);

- the ability to conduct research (in accordance with the focus (profile) of the master's program) in biology in order to develop the scientific potential of the Russian Far East and the development of the resources of the World Ocean (in accordance with the Programs for the Development and Competitiveness of FEFU) (PK-5);

teaching activities:

- possession of skills in the formation of educational material, lecturing, readiness to teach in educational organizations, as well as in educational institutions of higher education and the management of research work of students, the ability to present educational material in oral, written and graphic forms for various students (PC- 12);

- willingness to use in pedagogical activity knowledge about the history of the development of marine biology in the Far East

9. Characterization of the educational environment of FEFU, providing the formation of general cultural competencies and the achievement of educational goals

In accordance with the Charter of the FEFU and the University Development Program, the main task of educational work with students is to create conditions for active life of students, for civil self-determination and self-realization, to meet students' needs for intellectual, spiritual, cultural and moral development. Educational activities at the university are carried out systematically through the educational process, practices, research work of students and extracurricular work

in all areas. The university has created a campus environment that ensures the development of general cultural and socio-personal competencies of graduates.

The organization and content of the management system of educational and extracurricular activities in FEFU provide the following structures: Academic Council; administration; Vice-rector for educational and educational work; Schools Department of Youth Policy; Creative center; Joint Council of Students. Young people can make their efforts and realize their own projects at the Volunteer Training Center, the Parliamentary Debate Club, the student union, the United Student Scientific Society, the Center for the Development of Student Initiatives, the Youth Training Center, and the Student prof. detachments.

An important role in the formation of the educational environment is played by the student council of the School of Biomedicine. As part of the activities of student associations, financial support is provided for the activities of student associations, student groups, student self-government, the volunteer movement, the development of interest clubs, support for student sports, and patriotic direction.

The SchBM Student Council participates in the organization of extracurricular activities of school students, identifies factors that impede the successful implementation of the educational process at the university, brings them to the attention of the school management, considers issues related to the observance of academic discipline, internal rules, protects the interests of students in cooperation with administration, helps students gain experience in organizational and executive activities.

The educational environment of the university ensures that each student has the opportunity to be active, to engage in social practice, in solving the problems of the university, city, country, while developing the corresponding general cultural and professional competencies. So, to support and motivate students at FEFU, a number of state and non-state scholarships have been defined: a scholarship for successes in scientific activity, a scholarship for successes in social activities, a scholarship for successes in sports, a scholarship for successes in creative activities, a scholarship from the V. Potanin Charitable Foundation, Scholarship of the Oxford Russian Fund, Scholarship of the Governor of Primorsky Territory, Scholarship of Genzo Shimadzu, Scholarship of BP, Scholarship Program Alfa Chance, International Scholarship of K rporatsii Mitsubishi et al.

The University is a unique complex of buildings and structures located on an area of about a million square meters, with a well-developed campus infrastructure, including hostels and hotels, sports facilities and facilities, a medical center, a network of canteens and cafes, gyms, grocery stores, pharmacies, post offices and banks, laundries, ateliers and other facilities providing all conditions for accommodation, meals, recreation, sports and recreation for students and staff.

All campus buildings are designed with accessibility in mind. In order to provide special training conditions for people with disabilities and people with disabilities, FEFU maintains specialized records of people with disabilities and people with disabilities at the stages of their admission, training, and employment.

10. A system for assessing the quality of mastering by students of an educational program

Evaluation of the quality of development of the higher education and vocational education and training program includes current control, interim certification and state final certification of graduates. For a systematic work to support academic performance at the university, a rating assessment of students' knowledge has been developed.

The procedure for conducting current control and intermediate certification is regulated by the "Regulation on the current control of academic performance, current and intermediate certification of students enrolled in higher education educational programs at FEFU", approved by order No. 12-13-1376 of 05.07.2017; "The Regulation on the rating system for assessing the performance of students of higher education programs of FEFU", approved by order of October 28, 2014 No. 12-13-17184; "Regulation on the monitoring of the effectiveness of the educational process", approved by order of October 28, 2014 No. 12-13-1719.

The conduct of state final certification is regulated by the "Regulation on the state final certification of higher education educational programs - undergraduate, specialty, master's programs", approved by order dated 12/27/2015 No. 12-13-2285. Evaluation tools in the form of a fund of evaluation tools for all forms of certification tests and monitoring are developed and presented in the BlackBoard Learn e-learning support system. Evaluation tools are developed in accordance with the "Regulation on the funds of the evaluation funds of educational programs of higher education - undergraduate, specialist, and master's programs at FEFU", approved by order of 12.05.2015 No. 12-13-850. For each result of training in a discipline, practice or final certification, indicators and criteria for assessing the formation of competencies at various stages of their formation, scales and assessment procedures are defined.

11. Specific Features of MPEP

The training of specialists in the field of cell biology is an urgent task of higher education, since fundamental knowledge in this field of natural science is crucial for the further development of theoretical and experimental biology, biotechnology and medicine.

The future of medicine today is reasonably connected with the development of cellular technologies, therefore the labor market requires highly qualified specialists to manage modern medical institutions with the necessary set of

professional competencies in research, production, management and design activities.

Disciplines of the Master's program "Molecular and Cellular Biology" areas 06.04.01 Biology "Molecular Cell Biology", "Molecular and Cellular Mechanisms of Carcinogenesis", "Molecular Genetics, Human Genetics", "Biomedical Cell Technologies", "Molecular Bioengineering", "Reproduction and cell differentiation", "Neurobiology", "Pathological histology" are aimed at creating a deeper understanding of the structural-functional organization of prokaryotic and eukaryotic cells, structurally-functional genome organization and regulation of expression, and adaptation mechanisms autoregulation cell proliferation and differentiation, integration into cells of various organisms, cell-cell interactions; the formation of a new professional worldview of the master, taking into account the prospects for the development of the industry and the region as a whole for work in the immunopharmacology laboratory of SBM FEFU; in the regional clinical center of specialized types of medical care; in all research institutes of the Russian Academy of Sciences; private medical clinics, IVF centers; modern clinics using cell technology; medical diagnostic centers; research and testing laboratories of industrial enterprises.

During the preparation, undergraduates will get acquainted with the problems of tumor growth, master the methods of light and electron microscopy, culturing cells and tissues, isolating and studying subcellular structures, analyzing metabolic processes, immunochemistry, and other methods of cell biology.

The educational program involves conducting undergraduate research work in the semester and the completion of a master's thesis.

A graduate with a master's qualification may hold the following positions:

- Researcher at the institutions of the Russian Academy of Sciences and RAMS;

- teachers of higher medical institutions;

- employees of medical centers.

Possible employment places for graduates can be: medical clinics, regional clinical center for specialized types of medical care, research institutes such as the Institute of Marine Biology named after A.V. Zhirmunsky FEB RAS, Pacific Oceanological Institute FEB RAS, Biological and Soil Institute FEB RAS, Pacific Institute of Bioorganic Chemistry FEB RAS, private medical clinics involved in IVF, modern clinics that use cell technology in reproductive medicine, burn therapy, transfusion and various areas of transplantology, medical diagnostic centers, research and testing laboratories of industrial enterprises.

12. Description of active / interactive methods and forms of organization of classes, electronic educational technologies used in the implementation of the MPEP

In the educational process in the direction of preparation 06.04.01 Biology, the master's program "Molecular and Cellular Biology" provides for the widespread use of active and interactive methods and forms of conducting classes. According to the curriculum of the BEP with the use of active and interactive methods and forms, 38.7% of the classroom activities are conducted (Table 1).

Table 1 - Characteristics of active / interactive methods and forms of organization of classes on MPEP

Methods and forms of organization of classes	Description of active / interactive methods and forms of organization of classes	Formed competencies
Lecture - Press Conference	A distinctive feature of this form of lecture is to intensify the work of masters in the classroom by addressing each master individually addressed: the need to formulate a question and ask it correctly, initiating thought activity, and waiting for an answer to your question concentrates the attention of the master.	<ul style="list-style-type: none"> – <input type="checkbox"/> the ability to creatively adapt the achievements of foreign science, technology and education to domestic practice, a high degree of professional mobility (CK-1); – <input type="checkbox"/> ability to generate ideas in scientific and professional activities (CK-5); – <input type="checkbox"/> ability to abstract thinking, analysis, synthesis (CK-8); – <input type="checkbox"/> willingness to communicate verbally and in writing in the state language of the Russian Federation and a foreign language for solving problems of professional activity (GCP-1)
Brainstorm	Refers to the set of methods of group discussion. This is a method of activating creative thinking in a group in which any student's answer to a question is accepted.	<ul style="list-style-type: none"> – - the ability to creatively adapt the achievements of foreign science, technology and education to domestic practice, a

	<p>Brainstorming ”is used when you need to find out the awareness and / or attitude of participants to a specific issue. You can apply this form of work to get feedback. After the completion of the “brain attack” (which should not take a lot of time, on average 4-5 minutes), it is necessary to discuss all the answers, choose the main and secondary.</p>	<p>high degree of professional mobility (CK-1);</p> <ul style="list-style-type: none"> – - ability to generate ideas in scientific and professional activities (CK-5); – - ability to abstract thinking, analysis, synthesis (CK-8); – - readiness for self-development, self-realization, use of creative potential (CK-10); – - willingness to communicate verbally and in writing in the state language of the Russian Federation and a foreign language for solving problems of professional activity (GCP-1)
<p>Role-playing game</p>	<p>A tool for modeling various conditions of professional activity by the search for new ways of its implementation. A business game imitates various aspects of human activity and social interaction.</p>	<ul style="list-style-type: none"> – willingness to show leadership qualities and organize the work of the team, own effective technologies for solving professional problems (CK-2); – ability to work in project multidisciplinary teams, including as a leader (CK-3); – willingness to act in unusual situations, bear social and ethical responsibility for decisions made (CK-9); – the ability to independently analyze the available information, identify fundamental problems, set a task and carry out field, laboratory biological research in

		<p>solving specific problems using modern equipment and computing tools, be responsible for the quality of work and the scientific reliability of the results (GCP-4);</p> <ul style="list-style-type: none"> - - the ability to use the philosophical concepts of natural science for the formation of a scientific worldview (GCP-8)
Project Method	<p>Stimulate students' interest in certain problems involving some amount of ownership knowledge; through project activities involving a solution to one or a number of problems, show practical application of the knowledge gained.</p>	<ul style="list-style-type: none"> - the ability to creatively use in scientific and industrial-technological activities the knowledge of fundamental and applied sections of disciplines (modules) that determine the direction (profile) of the master's program (CK-1); - the ability to plan and implement professional events (in accordance with the orientation (profile) of the master's program) (CK-2); - the ability to apply the methodological foundations of designing, performing field and laboratory biological, environmental studies, using modern equipment and computer systems (in accordance with the focus (profile) of the master's program) (CK-3); - ability to generate new ideas and methodological solutions (CK-4); - the ability to conduct research (in accordance with the orientation

		(profile) of the master's program) in biology in order to develop the scientific potential of the Russian Far East and the development of the resources of the World Ocean (in accordance with the Programs for the Development and Competitiveness of FEFU) (CK-5);
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13. Features of the organization of the educational process in the educational program for the disabled and persons with disabilities

FEFU implements an organizational model of inclusive education - ensuring equal access to education for all students, taking into account the various special educational needs and individual capabilities of students. The model allows people with disabilities (HIA) to use education as the most effective mechanism for personal development and raising their social status. In order to create conditions for providing inclusive education for people with disabilities and people with disabilities, the University structural units perform the following tasks:

- the department for work with applicants organizes career guidance among potential applicants, including among persons with disabilities and people with disabilities: open days, career guidance testing, webinars for graduates of schools, vocational education institutions, counseling for this category of students and their parents on issues admission and training, prepares promotional materials, organizes interaction with educational organizations;

- the youth policy department provides support for inclusive education for people with disabilities, resolving issues of development and maintenance of the information technology base of inclusive education, elements of distance learning for people with disabilities, creating a barrier-free environment, collecting information about people with disabilities and people with disabilities, ensures their systematic registration at the stages of their admission, training employment;

- Department of extra-curricular activities of FEFU provides adaptation of disabled people and people with disabilities to the conditions and regime of educational activities, takes measures to create a sociocultural tolerant environment necessary for the formation of a civic, legal and professional position of complicity, the readiness of all team members for communication and cooperation, and the ability to tolerate perceive social, personal and cultural differences;

□ The department of career guidance and interaction with employers assists in the employment of disabled graduates and people with disabilities in the form of: presentations and meetings of employers with senior students, individual consultations on employment issues, master classes and trainings.

The content of higher education in educational programs and the conditions for organizing training for people with disabilities are determined by the adapted educational program, and for people with disabilities also in accordance with the individual rehabilitation program, which is developed by the Federal Medical and Social Expertise. An adapted educational program is developed if there is a statement from the student (parents, legal representatives) and medical indications. Training in educational programs for people with disabilities and students with disabilities is carried out by the organization, taking into account the characteristics of psychophysical development, individual capabilities and health status. The choice of teaching methods in each case is determined by the learning objectives, the content of training, the level of professional training of teachers, methodological and logistical support, the availability of time for preparation, taking into account the characteristics of psychophysical development, individual capabilities and the health status of students.

Persons with disabilities and hearing impairments, visual impairments and musculoskeletal system disabilities can be educated at the University under this main educational program in full-time education using elements of distance learning technologies.

The University provides students with disabilities and people with disabilities with the opportunity to master specialized adaptation disciplines included in the variable part of the BEP. Teachers whose courses require the implementation of certain specific actions and constitute a problem or action that is not feasible for students experiencing difficulties with movement or speech are required to take these features into account and offer disabled people and people with disabilities alternative methods of reinforcing the material under study. Timely informing teachers about people with disabilities and people with disabilities in a particular group is carried out by the responsible person, established by order of the school principal.

In the reading rooms of the FEFU scientific library, workplaces for people with disabilities are equipped with braille displays and printers; equipped with: portable devices for reading flat-printed texts, scanning and reading machines with a video enlarger with the ability to control color spectra; magnifying electronic magnifiers and ultrasonic markers.

If necessary, individual curricula and individual training schedules can be developed for people with disabilities and people with disabilities. The term for

obtaining higher education when studying according to an individual curriculum for disabled people and people with disabilities can be increased, if desired, but not more than a year.

When a disabled person and a student with special needs are sent to an organization or enterprise to undergo the practice stipulated by the curriculum, the University agrees with the organization (enterprise) the conditions and types of work, taking into account the recommendations of the Federal Medical and Social Expertise and an individual rehabilitation program for the disabled. If necessary, special jobs can be created for practical training in accordance with the nature of violations, as well as taking into account the professional type of activity and the nature of the work performed by a disabled student with labor functions.

To carry out activities of the current monitoring of academic performance, intermediate and final certification of disabled people and people with disabilities, assessment funds are used that are adapted for such students and allow them to evaluate the achievement of learning outcomes and the level of formation of all competencies stated in the educational program. The form of intermediate and state final certification for students with disabilities and persons with disabilities is established taking into account individual psychophysical characteristics (verbally, in writing on paper, in writing on a computer, in the form of testing, etc.).

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Head of EP, Ph.D.


V.V. Kumeiko

Deputy director
on educational and educational work
School of Biomedicine


E.V. Khozhaenko

I. Documents governing the organization and content educational process

1.1 Learning Schedule

The calendar schedule of the educational process of the program “Molecular and Cellular Biology” in the direction of preparation 06.04.01 Biology sets the sequence and duration of theoretical training, examination sessions, practices, state final certification, vacations. The schedule is developed in accordance with the requirements of the educational standard, independently established by the Far Eastern Federal University, a federal state autonomous educational institution of higher education for ongoing major professional educational programs in the field of study 06.04.01 Biology, level of higher education, master's degree, approved by order of the rector dated 04.04.2016 No. 12-13-592.

The schedule of the educational process is presented in Appendix 1.

1.2 Academic plan

The curriculum of the educational program "Molecular and Cellular Biology" (master's degree) in the direction of preparation 04/06/01 Biology, compiled in accordance with the requirements for the structure of MPEP formulated in section V OS FEFU in the direction of preparation, and local acts of the FEFU that determine its order development, coordination and approval, and in the form developed by the Information and Methodological Center for Analysis (Shakhty), approved by the decision of the FEFU Academic Council and approved by the Vice-Rector for Academic Affairs

The curriculum contains a list of disciplines (modules), practices, certification tests of the state final certification of students, other types of educational activities, indicating their volume in credit units, sequence and distribution by periods of study. The curriculum highlights the amount of work of students in interaction with the teacher (by type of training) and the students' independent work. For each discipline (module) and practice, a form of intermediate certification of students is indicated.

The curriculum for education and training includes the compulsory part (basic) and the part formed by participants in educational relations (optional). The basic part of the curriculum contains the disciplines (modules) required for all educational programs in the field of preparation 06.04.01 Biology, the disciplines of the variable part ensure the implementation of the OPOP “Molecular and Cellular Biology”. The curriculum of the OPOP contains disciplines for the choice of students in the amount of 42.8 (at least 30 percent) of the variable part of the MPEP IN.

The curriculum is presented in Appendix 1.

1.3 Competency Matrix

The matrix of competencies formation of the program “Molecular and Cellular Biology” of the training direction 06.04.01 Biology reflects the relationship between the formed competencies and disciplines of the basic and variative parts, all types of practices, including research work, as well as the forms of assessment tools for each of the listed types of educational work.

Forms of assessment tools correspond to the work programs of disciplines, programs of practices, including research work, and state final certification.

The competency formation matrix is presented in Appendix 3.

1.4 Educational-methodical complexes of educational disciplines (UMCED)

Educational-methodical complexes of educational disciplines are developed for all educational disciplines (modules) of both the basic and variable parts, including disciplines of the choice of students, in accordance with the requirements of the existing GNI FEFU.

The structure of UMCED includes:

1) the work program of the discipline (WPD), which contains:

- title page;
- annotation;
- structure and content of the theoretical and practical part of the course;
- educational and methodological support for independent work of students;
- monitoring the achievement of the objectives of the course (a fund of assessment tools for conducting intermediate certification of students in the discipline; a description of the assessment tools for ongoing monitoring);
- a list of educational literature and informational and methodological support for the discipline (a list of basic and additional educational literature, resources of the information and telecommunication network “Internet”, a list of information technologies and software);
- guidelines for the development of discipline;
- material and technical support of discipline.

2) educational and methodological support of students' independent work;

3) assessment fund.

WPD of the program “Molecular and Cellular Biology” in the direction of preparation 06.04.01 Biology, compiled taking into account the

latest achievements in the field of biology, biomedicine, in the field of cellular medical technologies and reflect the current level of development of science and practice.

Funds of appraisal funds for intermediate certification of students in a discipline (module), developed in accordance with the Regulation on the funds of appraisal funds of FEFU, approved by order of the rector dated 12.05.2015 No. 12-13-850, which are part of the work programs of disciplines (modules), include in itself:

- a list of competencies formed by this discipline, indicating the stages of their formation in the process of mastering the educational program;
- description of indicators and criteria for assessing competencies at various stages of their formation, description of assessment scales;
- a list of control tasks or other materials necessary for assessing knowledge, skills, and / or experience that characterize the stages of formation of competencies in the process of mastering an educational program;
- description of the procedure for assessing knowledge, skills, and / or experience of activities that characterize the stages of formation of competencies.

The work programs also include a description of the forms of monitoring in the disciplines.

Educational-methodical complexes of educational disciplines are presented in Appendix 4.

1.5 Practice Programs (including research work)

The curriculum of the MPEP of the FEFU program “Molecular and Cellular Biology” in the direction of preparation 06.04.01 Biology, the following types and types of practices are provided.

1. Educational practice.

1.1 The practice of obtaining primary professional skills.

2. Manufacturing practice.

2.1 The practice of obtaining professional skills and professional experience in accordance with the profile and specific professional tasks facing the undergraduate:

research;

pedagogical;

2.2 Research work.

The goals of the practice are to consolidate the theoretical knowledge gained in the study of basic and professional disciplines; acquisition of

professional skills in future professional activities; the formation of competencies that meet the requirements of the main professional educational program of the master's program "Molecular and Cellular Biology" in the direction of preparation 06.04.01 Biology.

Practice in the content of the main professional educational program of the magistracy "Molecular and Cellular Biology" in the direction of preparation 06.04.01 Biology (level of academic master's program) is 51 z.

The programs of practices are developed in accordance with the Regulation on the Practices of the Federal State Autonomous Educational Institution of Higher Professional Education "Far Eastern Federal University", approved by order of the rector dated October 23, 2015 No. 12-13-2030 and includes:

- an indication of the type of practice, the method and form (s) of its implementation;
 - a list of the planned learning outcomes during the internship, correlated with the planned learning outcomes of the educational program;
 - an indication of the place of practice in the structure of the educational program;
 - an indication of the volume of practice in credit units and its duration in weeks or in academic or astronomical hours;
 - practice content;
 - indication of reporting forms for practice;
 - fund of assessment tools for conducting intermediate certification of students in practice;
 - a list of educational literature and Internet resources necessary for conducting the practice;
 - a list of information technologies used in the practice, including a list of software and information help systems (if necessary);
- description of the material and technical base necessary for the practice.

Practice programs are presented in Appendix 5.

The program of research work is developed in accordance with the requirements of the OS of the Far Eastern Federal University in the field of preparation 06.04.01 Biology, the program "Molecular and Cellular Biology".

Research work is aimed at the formation of students' skills and the development of competencies in research activities, allowing to solve the following professional problems:

- independent choice and justification of the goal, organization and conduct of scientific research on an urgent problem in accordance with the orientation (profile) of the master's program;
- formulation of new tasks arising during the study;
- selection, justification and development of methods adequate to the goal;
- the development of new theories, models, research methods, the development of new methodological approaches;
- work with scientific information using new technologies;
- processing and critical evaluation of research results;
- preparation and execution of scientific publications, reports, patents and reports, seminars, conferences.

In the program of research work (R&D) in the direction of 04/06/01 Biology, the program "Molecular and Cellular Biology", types, stages of research carried out by students under this OPOP, forms of monitoring the progress of its implementation are indicated.

The research program is presented in Appendix 5.

1.6 State Final Attestation Program

The state final certification of the graduate of the program "Molecular and Cellular Biology" in the direction of preparation 06.04.01 Biology is mandatory and is carried out after mastering the main professional educational program in full.

State final certification without fail includes protection of final qualification work.

The program of state final certification was developed in accordance with the Regulation on the state final certification, approved by order of the rector dated 04.17.2015 No. 12-13-2285, with amendments and additions dated 13.06.2017, No. 12-13-1210.

The program of state final certification includes a fund of assessment funds for state final certification, and also determines the requirements for the content, volume and structure of final qualification works.

The program of state final certification is presented in Appendix 6.

II. Actual resource support for the implementation of the OPOP

2.1 Information on HR Support

The requirements for the staffing of the BEP are determined in accordance with the OS of the Far Eastern Federal University in the direction of preparation 06.04.01 Biology, the program of the academic master's program "Molecular and Cellular Biology".

The share of full-time scientific and pedagogical workers (in terms of integer rates) is 90.2% of the total number of scientific and pedagogical workers involved in the implementation of the educational program.

The implementation of the OPOP is ensured by scientific and pedagogical personnel with a basic education corresponding to the profile of the discipline taught, whose share in the total number of scientific and pedagogical workers is 84.21%.

The share of teachers with a scientific degree and (or) academic rank and the share of scientific and pedagogical workers from among the leaders and employees of organizations whose activities are related to the focus of the implemented program in the total number of employees implementing the program meets the requirements of the educational standard of higher education independently established by FEFU in the direction of preparation 04/06/01 Biology, approved by order of the rector 04/04/2016 No. 12-13-592.

The general management of the scientific content of the Master's program on 04/06/01 "Molecular and Cellular Biology" is carried out by the staff scientific and pedagogical worker of the organization, Ph.D., director of the Department of Medical Biology and Biotechnology of the School of Biomedicine V.V. Kumeiko, acting as the main executor of the RSF grant No. 15-15-20026 "Molecular recognition mechanisms in marine organisms for creating new biomedical technologies" during 2015-2017, having annual publications on the results of this research activity in leading foreign peer-reviewed scientific journals and publications:

- Kumeiko V.V., Sokolnikova Y.N., Grinchenko A.V., Mokrina M.S., Kniazkina M.I. Immune state correlates with histopathological level and reveals molluscan health in populations of *Modiolus kurilensis* by integral health index (IHI) // *Journal of Invertebrate Pathology*, 2018. V. 154, p. 42-57. <https://doi.org/10.1016/j.jip.2018.03.014>. IF = 2.5. Q1;

- Gulaia V., Kumeiko V., Shved N., Cicinskas E., Rybtsov S., Ruzov A., Kagansky A. Molecular mechanisms governing the stem cell's fate in brain cancer: factors of stemness and quiescence // *Frontiers in Cellular*

Neuroscience , 2018.V. 12: 388. doi: 10.3389 / fncel.2018.00388. IF = 4.9. Q1.

Carrying out annual testing of the results of this research activity at national and international conferences,

- Kumeiko V.V., Dyuzhen I.V., Shved N.A., Shcheblykina A.V., Belousov A.S., Malykin G.V., Tokmakova N.P., Anisimov A.P., Khotimchenko Yu.S. New biomaterials based on modified plant polygalacturonides present a variety of prospective applications in regenerative medicine // Future of biomedicine 2017, P. 61. (abstract book, ISBN 978-5-7444-4083-1), oral presentation at the International Inception Conference International Future of biomedicine 2017 scientific conference, Vladivostok, September 10-15, 2017)

- V.V. Kumeiko, I.V. Dyuzhen, N.A. Shved, A.V. Vitkalova, A.S. Belousov, G.V. Malykin, V. D. Kuznetsov, V.V. Kovalev, N.P. Tokmakova, A.P. Anisimov, Yu.S. Khotimchenko. New biomaterials based on modified polygalacturonides present a variety of prospective applications in regenerative medicine // The second international conference "Cell technologies at the edge: from research to practice" (CTERP) "Translational research in cell therapy", Moscow, April 11–13 , 2018, p. 54., oral report at an international scientific conference, Moscow, April 11-13, 2018.

- V. V. Kumeiko, I.V. Dyuzhen, N. A. Shved, A. V. Vitkalova, A. S. Belousov, G. V. Malykin, V.S. Gulaya, T.D. Karp, V.D. Kuznetsov, N. P. Tokmakova, V.V. Kovalev, A. P. Anisimov, Yu. S. Khotimchenko // Hydrogels based on modified polygalacturonides differentially modulate cell proliferation and behavior, oral presentation at the e-Asia Joint Research Program: Workshop on Cancer Research-2018, Vladivostok, August 24-25, 2018

Information about the staffing of the educational program, which includes information about teachers who implement disciplines (modules) in accordance with the curriculum, is presented in the form of a table in Appendix 7.

2.2 Information on the availability of printed and electronic educational and MPEP information resources

The requirements for the provision of educational and methodological documentation for the educational and technical education department are determined in accordance with the OS of VO FEFU in the direction of preparation 06.04.01 Biology, the program “Molecular and Cellular Biology”.

OPOP provided by print and electronic publications of the main educational literature. All publications of basic literature are available to

students in hard copy in the FEFU library or in electronic form in electronic library systems (electronic libraries) formed on the basis of direct contractual relations with copyright holders.

The electronic library system (electronic library) and the electronic information and educational environment provide simultaneous 100 percent access for students under the master's program. Students are provided with access (including remote) to modern professional databases and information reference systems, the composition of which is determined in the work programs of disciplines (modules).

Students from among persons with disabilities are provided with electronic educational resources in forms adapted to their health restrictions.

Information on the availability of printed and electronic educational and information resources necessary to ensure the educational process is presented in the form of a table in Appendix 8.

2.3 Information about the logistics of MPEP

FEFU has a sufficient material and technical base, which provides lecture-type classes, seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification, as well as premises for independent work and premises for storage and preventive maintenance of educational equipment. Special rooms are equipped with specialized furniture and technical training facilities.

Classrooms for lectures are equipped with multimedia equipment.

The list of logistics necessary for the implementation of the master's program includes laboratories equipped with laboratory equipment, depending on the degree of complexity.

The rooms for independent work of students are equipped with computer equipment with the ability to connect to the Internet and provide access to the electronic information and educational environment of the organization. Students and scientific-pedagogical workers are provided with access (remote access) to modern professional databases (including international abstract databases of scientific publications) and information reference systems.

The university is provided with the necessary set of licensed software (the list is defined in the work programs of the disciplines).

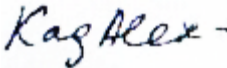
All premises comply with applicable sanitary and fire regulations.

Information on the material and technical support of the OPOP, including information on the availability of equipped classrooms, facilities for conducting practical exercises with a list of basic equipment, physical education and sports facilities, is presented in table form in Appendix 9.

2.4 Financial conditions for the implementation of the master's program

Financial support for the implementation of the master's program is carried out in an amount not lower than the basic standard costs for the provision of public services in the field of education established by the Ministry of Education and Science of the Russian Federation for this level of education and the direction of training, taking into account corrective coefficients that take into account the specifics of educational programs in accordance with the Methodology for determining standard costs for the provision of public services for the implementation of educational programs of higher education (field of study) and the integrated groups of specialties (training areas), approved by the Ministry of Education and Science of the Russian Federation dated October 30, 2015 № 1272 (registered by the Ministry of Justice of the Russian Federation of November 30, 2015, registration N 39898).

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