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

APPROVE
Director of the Institute of Life Sciences and Biomedicine (Schools)

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Full name

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ANNOTATION
BASIC PROFESSIONAL EDUCATIONAL HIGHER EDUCATION PROGRAMS

Master's program
06.04.01 Biology

Name of the educational program "Molecular and Cell Biology (in English)"

Graduate Qualification: Master
Full-time form of education
Normative period of mastering the program is 2 years
Starting year of preparation: 2022

Vladivostok
2021

1. General provisions

The main professional educational program (OPEP) is a master's program implemented by the federal state autonomous educational institution of higher education "Far Eastern Federal University" in the field of study 04.06.01 Biology, is a system of documents developed and approved by a higher educational institution, taking into account the requirements of the labor market on the basis of educational standard(specify the details of the standard).

The focus of the OBOR is focused on:

- the area (areas) of professional activity and (or) the sphere (areas) of professional activity of graduates, to which the program is oriented;
- type (types) of tasks and tasks of professional activity of graduates;
- on the objects of professional activity of graduates or area (areas) of knowledge.

The orientation of the program determines the subject-thematic content, the prevailing types of educational activities of the student and the requirements for the results of mastering the BEP. Qualification awarded to graduates of the educational program: master.

OBEP is a complex of the main characteristics of education (volume, content, planned results), organizational and pedagogical conditions, forms of certification, which is presented as a general characteristic of the main professional educational program, curriculum, calendar curriculum, work programs of disciplines (modules), practices , GIA programs, including assessment tools and methodological materials, information about the actual resource provision of the educational process.

2. Regulatory framework for the development of BRI

The regulatory legal framework for the development of the BRI consists of:

- Federal Law No. 273-FZ of December 29, 2012 “On Education in the Russian Federation”;
- federal state educational standard of higher educationin the field of study 06.04.01 Biology, approved by order of the Ministry of Education and Science of the Russian Federation (Ministry of Science and Higher Education of the Russian Federation) dated 11.08.2020 No. 934;
- order dated April 6, 2021 No. 245 “On approval of the procedure for organizing and implementing educational activities in educational programs of higher education - bachelor's programs, specialist's programs, master's programs”;
- Order of the Ministry of Education and Science of Russia dated November 19, 2013 No. 1258 (as amended on August 17, 2020) “On approval of the Procedure for organizing and implementing educational activities in educational programs of higher education - residency programs”;
- Order of the Ministry of Education and Science of the Russian Federation dated August 23, 2017 No. 816 “Procedure for the use by organizations engaged in educational activities of e-learning, distance learning technologies in the implementation of educational programs”;
- Order of the Ministry of Education and Science of the Russian Federation dated June 29, 2015 No. 636 “On Approval of the Procedure for Conducting State Final Attestation for Educational Programs of Higher Education - Bachelor’s Programs, Specialist’s Programs, Master’s Programs”;
- order of the Ministry of Education and Science of Russia and the Ministry of Education of Russia dated 05.08.2020 No. 885/390 “On the practical training of students”;
- professional standards approved by orders of the Ministry of Labor and Social Protection of the Russian Federation;
- order of Rosobrnadzor dated August 14, 2020 No. 831 “On approval of the Requirements for the structure of the official website of an educational organization in the Internet information and telecommunication network and the format for presenting information” (registered with the Ministry of Justice of Russia on November 12, 2020 No. 60867);
- Order of the Ministry of Education and Science of Russia No. 882, Ministry of Education of Russia No. 391 of 08/05/2020 "On the organization and implementation of educational activities in the network form of implementation of educational programs" (together with the Procedure for the organization and implementation of

educational activities in the network form of implementation of educational programs);

- regulatory documents of the Ministry of Science and Higher Education of the Russian Federation (Ministry of Education and Science of the Russian Federation), the Federal Service for Supervision in Education and Science;
- Charter and local regulations and documents of FEFU.

3. Terms, definitions, designations, abbreviations

IN- higher education;

GSP- issuing structural unit;

GIA -state final certification;

DOT– distance educational technologies;

HIA– limited health opportunities;

OPK– general professional competences;

OPOP (OP)– the main professional educational program;

OS VO FEFU- the educational standard of higher education, independently established by FEFU;

OTF- generalized labor function;

PC– professional competencies;

POOP– approximate basic educational program;

PSK– professionally specialized competencies;

RPD -work program of the discipline.

SPK– special professional competencies;

UK -universal competencies;

Code of Criminal Procedure– universal professional competencies;

GEF VO– federal state educational standard of higher education.

4. Goals and objectives of the main professional educational program

Social significance (mission) of the OPOP VO in the direction of preparation 06.04.01 Master's Biologyprograms "Molecular and Cell Biology (in English)»consists in the training of highly professional specialists capable of implementing a science-based set of measures to ensure biological safety in order to meet the economic needs of the Russian Federation.

The purpose of the master's program: the formation of professional competencies among students, allowing them to be in demand in the labor market, contributing to their social mobility and providing the ability to quickly and independently acquire new knowledge necessary for their adaptation and successful professional activities in the field of general and molecular biology. The main goal in this case is to find out how and to what extent the characteristic manifestations of life, such as heredity, reproduction of one's own kind, protein biosynthesis, excitability, growth and development, storage and transmission of information, energy transformations, mobility, etc. , are due to the structure, properties and interaction of molecules of biologically important substances, primarily the two main classes of high-molecular biopolymers - proteins and nucleic acids.

Objectives of the master's program:

– Cognition of the nature of life phenomena through the study of biological objects and systems at a level approaching the molecular,

– The study of the mechanisms of storage, transmission and implementation of genetic information,

– The study of the structure and functions of complex high-molecular compounds that make up the cell (proteins and nucleic acids),

– Development of methods that allow deciphering the structure, and then the three-dimensional, spatial organization of high-molecular nucleic acids,

– Deciphering the molecular mechanisms of action of hormones, toxic and medicinal substances,

– Operation of the genetic apparatus (genome) of living organisms, etc.

Features of the educational program - focus on meeting the needs of the Russian Federation in the Far East; use of modern educational and information technologies in the educational process; ensuring the possibility of choosing individual educational trajectories; in-depth language training.

Types of tasks of professional activity of graduates:

– research

– pedagogical

5. The labor intensity of the OBOR in the direction of training

The labor intensity of the BEP in the direction of preparation 06.04.01 Biology is 120 credits.

6. Areas of professional activity

Areas of professional activity and (or) areas of professional activity in which graduates who have mastered the Master's program can carry out professional activities:

– 01 Education and science
– 02 healthcare

7. Objects of professional activity

Objects of professional activity of graduates or area (areas) of knowledge:

– 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;
– microorganisms, cell cultures of animals and plants, viruses, enzymes, biologically active chemicals;
– devices and equipment for studying the properties of used microorganisms, cell cultures and substances obtained with their help in laboratory and industrial conditions;
– products of biosynthesis and biotransformation of cell cultures of animals and plants;
– cells and tissues of the human body;
– objects of genetic engineering, microbiological synthesis, biocatalysis, nanobiotechnology, molecular modeling.

OPOP is implemented:

- on one's own;
- with partial use of e-learning (hereinafter - EE) and (or) with partial use of distance learning technologies;
- in the state language.

8. Requirements for the results of the development of the OPOP

As a result of mastering the OBEP HE, the graduate should form universal, general professional and professional competencies.

Universal competencies of graduates and indicators of their achievement:

Name of the category (group) of universal competencies	Code and name of the graduate's universal competence	Code and name of the indicator of achievement of universal competence
Systems and critical thinking	UK-1 Able to carry out a critical analysis of problem situations based on a systematic approach, develop an action strategy	UK-1.1 Analyzes a problem situation using a systematic approach and modern natural science knowledge, using reliable data and reliable sources of information UK-1.2 Develops and meaningfully argues possible strategies for solving a problem situation based on a systematic and interdisciplinary approach, taking into account the parameters of the level of public health UK-1.3 Develops a scenario for implementing the optimal strategy for solving a problem situation, taking into account the necessary resources, achievable results, possible risks and consequences.
Development and implementation of projects	UK-2 Able to manage a project at all stages of its life cycle	UK-2.1 Develops the concept of the project within the framework of a specific problem field in the field of biosafety and human health, taking into account the possible results and consequences of the project, theoretically substantiates the concept. Formulates the goal, objectives, relevance, significance (scientific, practical, methodological and other, depending on the type of project) UK-2.2 Develops a project implementation plan taking into account possible resources, risks, scenarios, other variable parameters, proposes procedures and mechanisms for monitoring the implementation and results of the project UK-2.3 Carries out coordination and control in the process of project implementation, corrects deviations, makes additional changes to the implementation plan, if necessary, determines the areas of responsibility of team members
Teamwork and Leadership	UK-3 Able to organize and manage the work of the team, developing a	UK-3.1 Develops a teamwork strategy to achieve the set goal, organizes the selection of team members

	team strategy to achieve the goal	UK-3.2 Organizes and corrects the work of the team, including on the basis of collegial decisions, distributes functional responsibilities, resolves possible conflicts and contradictions UK-3.3 Coordinates the overall work, organizes feedback, controls the result, takes managerial responsibility
Communication	UK-4 Able to use modern communication technologies, including in a foreign language(s), for academic and professional interaction	UK-4.1 Creates various types of written and oral texts in Russian and foreign languages for academic and professional interaction UK-4.2 Participates in the processes of professional communication in Russian and foreign languages, including the use of modern communication technologies UK-4.3 Presents the results of research and project activities at various public events, participates in academic and professional discussions in a foreign language
Intercultural interaction	UK-5 Able to analyze and take into account the diversity of cultures in the process of intercultural interaction	UK-5.1 Analyzes the socio-cultural parameters of various groups and communities and the socio-cultural context of interaction UK-5.2 Builds socio-cultural communication and interaction, taking into account the necessary parameters of intercultural communication and socio-cultural context UK-5.3 Builds professional interaction in a multicultural environment
Self-organization and self-development (including health protection)	UK-6 Is able to determine and implement the priorities of their own activities and ways to improve it based on self-assessment	UK-6.1 Solves the tasks of their own personal and professional development, determines and implements priorities for improving their own activities UK-6.2 Uses technologies and skills to manage their cognitive activity and improve it based on self-assessment, self-control and the principles of self-education throughout life, including using health-saving approaches and techniques

General professional competencies of graduates and indicators of their achievement:

Name of the category (group) of universal	**Code and name of the graduate's**	**Code and name of the indicator of achievement of universal**

competencies	universal competence	competence
	GPC-1 Able to use and apply fundamental biological concepts and modern methodological approaches for setting and solving new non-standard tasks in the field of professional activity	GPC-1.1 Monitors current topical issues, major discoveries and methodological developments in the field of biological and related sciences GPC-1.2 Analyzes trends in the development of scientific research and practical developments in the chosen field of professional activity, formulates innovative proposals for solving non-standard problems, using in-depth general scientific and methodological special training GPC-1.3 Applies modern methodological approaches and methods for setting and solving new non-standard tasks in the field of professional activity
	GPC-2 Able to creatively use in professional activities the knowledge of fundamental and applied sections of disciplines (modules) that determine the direction of the master's program	GPC-2.1 Considers the theoretical foundations, traditional and modern research methods in accordance with the core activity GPC-2.2 Forms new solutions by integrating various methodological approaches and creative use of special theoretical and practical knowledge GPC-2.3 Uses in professional activities the knowledge of fundamental and applied sections of disciplines (modules) that determine the direction of the profile type of activity
	OPK-3 Able to use the philosophical concepts of natural science and understanding of modern biospheric processes for a systematic assessment and forecast of the development of the sphere of professional activity	GPC-3.1 Uses the basic philosophical concepts of classical and modern natural sciences, the fundamentals of the doctrine of the biosphere, the main methods and results of environmental monitoring, models and forecasts for the development of biospheric processes GPC-3.2 Applies systems analysis methods to assess the environmental impacts of anthropogenic activities GPC-3.3 Predicts, based on regulatory and scientific methodology, the environmental consequences of the development of the chosen professional field, has experience in choosing ways to optimize technological solutions from the standpoint of environmental safety GPC-3.4 Predicts the development of

		the sphere of professional activity for a systematic assessment based on an understanding of modern biospheric processes and the use of philosophical concepts of natural science
	GPC-4 Able to participate in the environmental impact assessment of territories and water areas, as well as technological production using biological methods for assessing environmental and biological safety	GPC-4.1 Uses the theoretical foundations, methods and regulatory documentation in the field of environmental expertise, features of the survey and assessment of the ecological state of territories and water areas, methods for testing the effectiveness and biosafety of products of technological production GPC-4.2 Uses professional knowledge and skills to develop and propose innovative tools and methods for environmental assessment GPC-4.3 Participates in the environmental review of technological production using biological methods for assessing environmental and biological safety Applies the experience of planning an environmental review based on the analysis of available evidence GPC-4.4 Applies the experience of planning an environmental review based on the analysis of available evidence
	GPC-5 Able to participate in the creation and implementation of new technologies in the field of professional activity and control of their environmental safety using living objects	GPC-5.1 Applies the theoretical foundations and practical experience of using various biological objects in the field of professional activity, bio- and environmental safety GPC-5.2 Applies biosafety performance criteria GPC-5.3 Participates in the creation and implementation of new technologies in the field of professional activity and the control of their environmental safety using living objects GPC-5.4 Applies the experience of working with living objects promising for biotechnological processes, in accordance with the core activity
	GPC-6 Able to creatively apply and modify modern computer technologies, work with professional	GPC-6.1 Develops ways and prospects for the use of modern computer technologies in the biological sciences and education GPC-6.2 Uses professional databases

	databases, professionally design and present the results of new developments.	and data banks in the chosen field of professional activity, the necessary mathematical apparatus, analysis and algorithm for storing electronic images, has experience in modifying computer technologies for professional research GPC-6.3 Uses modern computer technologies, works with professional databases, draws up and presents the results of new developments
	GPC-7 is able in the field of his professional activity to independently determine the strategy and issues of research, make decisions, including innovative ones, choose and modify methods, be responsible for the quality of work and implement their results, and ensure industrial safety measures when solving a specific problem.	GPC-7.1 Uses the main sources and methods of obtaining professional information, directions of scientific research corresponding to the direction of the master's program GPC-7.2 Identifies promising problems and formulates principles for solving actual research problems based on the use of complex information, including at the intersection of knowledge areas GPC-7.3 Develops methods for solving and coordinating the implementation of individual tasks under the leadership of a group of researchers, taking into account safety requirements GPC-7.4 Determines the strategy and issues of research, makes decisions, including innovative ones, chooses methods, is responsible for the quality of work and the implementation of their results, ensures industrial safety measures when solving a specific problem GPC-7.5 Uses methods for analyzing the reliability and assessing the prospects of the results of experiments and observations; -experience in generalization and analysis of scientific and scientific and technical information GPC-7.6 Apply the experience of presenting the results obtained in the form of reports and publications
	GPC-8 Able to use modern research equipment and computer technology to solve innovative problems in	GPC-8.1 Works with technical documentation, if necessary, prepares proposals for the modification of technical means to solve innovative problems in professional activities GPC-8.2 Uses types of modern

	professional activities	equipment for field and laboratory research in the field of professional activity GPC-8.3 Uses modern research equipment and computer technology to solve innovative problems in professional activities

Professional competencies of graduates and indicators of their achievement:

Code and name of professional competence	**PS code (if PS is available) or reference to other grounds**	**Labor function code (if there is a PS)**	**Competence achievement indicators**
Type of tasks of professional activity: research			
PC-1 Able to creatively use in scientific and industrial-technological activities the knowledge of fundamental and applied sections of disciplines (modules) that determine the scopeactivities of molecular and cellular biology.			PC-1.1 Works with scientific and technical information and specialized literature, studies the achievements of domestic and foreign science in the field of molecular and cellular biology using new technologies and electronic databases PC-1.2 Comprehends and formulates diagnostic solutions to the problems of molecular and cellular biology by integrating fundamental biological concepts and specialized knowledge in the field of professional activity PC-1.3 Uses in scientific and industrial and technological activities the knowledge of fundamental and applied sections of disciplines that determine the scope of molecular and cellular biology
PC-2 Able to apply the methodological foundations of design, laboratory biological, environmental research, use modern equipment and computer systems in molecular and cellular biology			PC-2.1 Develops rules and algorithms for designing, performing laboratory biological, environmental studies PC-2.2 Performs laboratory biological, environmental research using the scientific methodological foundations of fundamental research PC-2.3 Applies the methodological foundations for designing, performing laboratory biological, environmental studies, uses modern

			equipment and computer systems in molecular and cellular biology
PC-3 He is able to conduct research on biopolymers, their components and complexes, the structure and function of genes and genomes.			PC-3.1 Studies the structure and functions of biopolymers, their components and complexes, mechanisms of storage, transmission and implementation of genetic information at the molecular level PC-3.2 Characterizes in detail the main processes occurring in a living cell: the processes of replication, transcription, translation, recombination, repair, RNA and protein processing, protein folding and docking PC-3.3 Explores the main methods of intermolecular interactions and mutual regulation of the processes of functioning of a living cell as part of a multicellular organism PC-3.4 Analyzes the structure and functions of genes and genomes, conducts structural and functional analysis offlax proteins and the proteome as a whole
PC-4 Able to conduct scientific research in molecular and cellular biology in order to develop the scientific potential of the Russian Far East and OSwar resources of the oceans			PC-4.1 Conducts substantiation of scientific research in molecular and cellular biology in order to develop the scientific potential of the Russian Far East and the development of the resources of the World Ocean PC-4.2 Performs applied and exploratory research and development in molecular and cellular biology aimed at developing the scientific potential of the Russian Far East and developing the resources of the World Ocean PC-4.3 Interprets the results of scientific research in molecular and cellular biology aimed at developing the scientific potential of the Russian Far East and developing the resources of the World Ocean
PC-5 Able to conduct a systematic analysis of the relationship of cells, tissues			PC-5.1 Studies the relationship of cells, tissues and functional systems of organisms

and functional systemsorganisms			PC-5.2 Explores the relationship of cells, tissues and functional systems of organisms PC-5.3 Conducts a systematic analysis of the relationship of cells, tissues and functional systems of organisms
PC-6 Capable of developingexperimental models, methods of cytological diagnostics, morphometry, marker histo- and cytochemistry, etc.			PC-6.1 Designs and carries out fundamental research in the field of studying the patterns of structure and functioning of cells and tissues in normal, experimental and pathological conditions PC-6.2 Develops and critically evaluates an experimental research model in the field of cytology and histology PC-6.3 Performs histo- and cytological diagnostics, morphometry, marker histo- and cytochemistry
PC-7 Able to develop new drugs, conduct biomedical research using living organisms and biological systems of various levels of organization.			PC-7.1 Carries out the rationale for biomedical research with the aim of developing medicines using living organisms and biological systems of various levels of organization PC-7.2 Defines the goals and objectives of biomedical research and drug development. Plans biomedical research, selects the design of scientific research in accordance with the goals and objectives PC-7.3 Conducts biomedical research using living organisms and biological systems of various levels of organization, analyzes the results obtained PC-7.4 Interprets the results of biomedical research and development in order to elucidate the molecular mechanisms of biochemical processes
Type of tasks prof. activities: pedagogical			
PC-8 Able to form educational material, conduct lectures, seminars, practical and laboratory classes onhigher education programs			PC-8.1 Develops methodological materials on topics and forms of classes in higher education programs PC-8.2 Forms educational and thematic material on higher education programs in accordance with methodological developments

			and regulatory requirements PC-8.3 Conducts lectures, seminars, practical and laboratory classes on higher education programs
PC-9 Able to present educational material in oral, written and graphic forms forevil contingents of listeners			PC-9.1 Develops educational materials on the topics and forms of classes in oral, written and graphic forms for various contingents of students PC-9.2 Presents educational material in oral, written and graphic forms for various contingents of students
PC-10 Able to teach in general education institutions, as well as in educational institutions of higher education and leadership of researchstudents' activities			PC-10.1 Plans classes in educational institutions, as well as in educational institutions of higher education and management of research activities of students PC-10.2 Organizes classes in general educational institutions, as well as in educational institutions of higher education and the management of research activities of students PC-10.3 Teaches in general educational institutions, as well as in educational institutions of higher education and manages the research activities of students
PC-11 Able to use in teaching activities knowledge about the history of marine biology in the Far East, the contributionFar Eastern scientists to the research and scientific production potential of the country			PC-11.1 Uses in teaching activities knowledge about the history of the development of marine biology in the Far East, the contribution of Far Eastern scientists to the research and scientific production potential of the country
PC-12 Able to form educational material, conduct lectures, seminars, practical and laboratory classes on vocational education programs for various audiences			PC-12.1 Develops methodological materials on the topics and forms of classes in vocational education programs for various student contingents PC-12.2 Forms, in accordance with methodological developments and regulatory requirements, educational and thematic material on vocational education programs for various student contingents PC-12.3 Conducts lectures, seminars, practical and laboratory

			classes on vocational education programs for various audiences
PC-13 Able to teach in professional educational organizations and manage the research activities of students			PC-13.1 Plans classes in the field of vocational training and additional vocational education using the knowledge and methodology of vocational training PC-13.2 Organizes classes in the field of vocational training and additional professional education, using the methodology in accordance with professional training PC-13.3 Conducts training sessions in the field of vocational training and additional professional education, using knowledge and methodology in accordance with professional training PC-13.4 Plans the research activities of students in the field of professional interests using the knowledge of scientific design and research methodology PC-13.5 Organizes research activities of students in the field of professional interests using the knowledge of scientific design and research methodology PC-13.6 Manages the research activities of students in the field of professional interests using the knowledge of scientific design and research methodology

9. Specific Features of OPOP

The training of specialists in the field of molecular and cellular biology is an extremely urgent task, since fundamental knowledge in this field of natural science is of decisive importance for the further development of theoretical and experimental biology, biotechnology and medicine.

The scientific and methodological potential accumulated to date in the field of cell biology, genetics and molecular biology is the basis for the development of modern methods and means for the prevention, diagnosis and treatment of a wide range of human diseases, the regeneration of damaged tissues and organs using cell therapy.

Currently, molecular medicine is not limited to the application of molecular biology and molecular genetics to understanding human health and disease. The

goal of molecular medicine is to understand how health is maintained and the causes and mechanisms of human disease. The goal of molecular medicine is to develop a new understanding of good health and, through a better understanding of disease processes, to find new ways to prevent, diagnose and treat diseases.

Therefore, the future of medicine today is reasonably associated with the development of cellular technologies, and the labor market requires highly qualified specialists to manage modern medical institutions with the necessary set of professional competencies in research, development, management and design activities.

The importance of knowledge and research in the field of molecular and cellular biology is also determined by the fact that 50% of the world's funding for science supports molecular and cellular biology, and 70% of all publications in the most prestigious scientific journals are about achievements in molecular and cellular biology.

The choice of disciplines of the variable part of the general scientific and professional cycles is justified by their necessity and sufficiency for the formation of professional competencies of the graduate, taking into account the requests of potential employers.

10. Structure and content of the BRI

Structure and scope of the program 120 credits.

Program Structure		**The volume of the program and its blocks in units**
Block 1	Disciplines (modules)	66 z.u.
	Mandatory part:	24 z.u.
	Part of the OBOR formed by participants in educational relations	42 z.u.
Block 2	Practice	48 z.u.
	Mandatory part	3 credits
	Part of the OBOR formed by participants in educational relations	45 z.u.
Block 3	State final certification:	6 credits
	Implementation and defense of the final qualifying work	6 credits
Scope of the Master's program		120 z.u.

Disciplines (modules), practices of the mandatory part ensure the formation of the necessary general professional competencies in students, as well as universal ones.

The disciplines (modules), practices of the mandatory part include:

– B1.O.01 English for Special Purposes
– B1.O.02 Synergetics
– B1.O.03 Molecular biology
– B1.O.04 Philosophy of natural science
– B1.O.05 Ecological and biological safety
– B1.O.06 bioinformatics
– B1.O.07 Biostatistics
– B1.O.08 Project management and research methodology
– B2.O.01(U) Educational practice. Practice in the direction of professional activity

Disciplines (modules), practices of the part formed by the participants in educational relations ensure the formation of universal and professional competencies among students.

The disciplines (modules), practices of the part formed by the participants in educational relations include:

– B1.B.01 Molecular biology of the cell
– B1.V.02 Methodology and methods of teaching natural sciences
– B1.V.03 Immunology
– B1.V.04 Molecular genetics, human genetics
– B1.V.05 Commercialization of developments and technology transfer
– B1.V.06 Modeling and analysis of big data in biology
– B1.B.07 Molecular and cellular mechanisms of carcinogenesis
– B1.V.08 Research seminar "Modern problems of molecular and cellular biology"

B1.V.DV.01 Elective disciplines B1.V.DV.1
– B1.V.DV.01.01 Biomedical Cell Technologies
– B1.V.DV.01.02 Comparative histology

B1.V.DV.02 Elective disciplines B1.V.DV.2
– B1.V.DV.02.01 Medical and pharmaceutical biotechnology
– B1.V.DV.02.02 Molecular bioengineering

B1.V.DV.03 Elective disciplines B1.V.DV.3
– B1.V.DV.03.01 Methods of molecular and cellular diagnostics
– B1.V.DV.03.02 Cell reproduction and differentiation

B1.V.DV.04 Elective disciplines B1.V.DV.4
– B1.V.DV.04.01 Pathological histology
– B1.V.DV.04.02 Pharmacology and toxicology

B1.V.DV.05 Elective disciplines B1.V.DV.5
– B1.V.DV.05.01 Neurobiology

– B1.V.DV.05.02 Development and pathology of the brain

– B2.V.01(P) Internship. Research work

– B2.V.02(R) Internship. Practice for obtaining professional skills and experience in teaching

– B2.V.03(R) Industrial practice. Practice for obtaining professional skills and experience in research activities

– B2.V.04(P) Internship. Undergraduate practice, including research work

– FTD.01 Modern problems of clinical morphology

– FTD.02 Pathology

The volume of the compulsory part, excluding the volume of the state final certification, is 22.5% of the total volume of the program (established taking into account the requirements of the Federal State Educational Standard of Higher Education, in accordance with the curriculum).

11.Features of the organization of the educational process for 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 various special educational needs and individual abilities of students. The model allows people with disabilities to use education as the most effective mechanism for personal development and raising their social status. In order to create conditions for ensuring inclusive education for people with disabilities and persons with disabilities, the structural units of FEFU perform the following tasks:

– The Department for Work with Applicants organizes career guidance among potential applicants, including people with disabilities and people with disabilities: open days, career guidance testing, webinars for graduates of schools, vocational education institutions, consultations for this category of students and their parents on issues admission and training, prepares advertising and information materials, organizes interaction with educational organizations;

- schools, together with the Department of Career and Scholarship Programs, support inclusive education for people with disabilities, address issues of development and maintenance of the information technology base for inclusive education, elements of distance learning for people with disabilities, create a barrier-free environment, collect information about people with disabilities and people with disabilities, ensure their systematic accounting at the stages of admission, training, employment;

– the organization for the socialization and adaptation of students with disabilities "KIT" ensures the adaptation of disabled people and persons with

disabilities to the conditions and regime of educational activities, takes measures to create a socio-cultural tolerant environment necessary for the formation of a civil, legal and professional position of complicity, the readiness of all members of the team to communication and cooperation, to the ability to tolerate social, personal and cultural differences.

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

FEFU provides students with disabilities and disabled people with the opportunity to master specialized adaptation disciplines included in the variable part of the BEP. Teachers whose courses require the performance of certain specific actions that represent a problem or an action that is impossible for students who have difficulty with movement or speech are required to take these features into account and offer disabled people and people with disabilities alternative methods of consolidating the studied material. Timely informing teachers about disabled people and persons with disabilities in a particular group is carried out by a 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-print texts, scanning and reading machines, a video enlarger with the ability to regulate color spectra; magnifying electronic loupes and ultrasonic markers.

If necessary, individual curricula and individual training schedules can be developed for people with disabilities and persons with disabilities. The term for obtaining higher education when studying according to an individual curriculum for people with disabilities and persons with disabilities, if desired, can be increased, but not more than for a year.

When sending a disabled person and a student with disabilities to an organization or enterprise to undergo the practice provided for by the curriculum, FEFU coordinates with the organization (enterprise) the conditions and types of work, taking into account the recommendations of the Federal Institute of Medical

and Social Expertise and an individual program for the rehabilitation of a disabled person. If necessary, for internships, special jobs can be created in accordance with the nature of the violations, as well as taking into account the professional type of activity and the nature of the work performed by the student with a disability of labor functions.

For the implementation of ongoing monitoring of academic performance, intermediate and final certification of disabled people and persons with disabilities, assessment funds are used that are adapted for such students and allow assessing their achievement of learning outcomes and the level of formation of all competencies declared 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 (orally, in writing on paper, in writing on a computer, in the form of testing, etc.).

Head of the OPOP V.V.  Kumeiko

06.04.01 Biology,
"Molecular and cellular
biology (together with NSCMB
FEB RAS)"