



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

ANNOTATION
BASIC PROFESSIONAL EDUCATIONAL PROGRAM OF HIGHER EDUCATION

Master's program 06.04.01 Biology

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

Vladivostok
2023

The main professional educational program of higher education (hereinafter - OBEP HE) is a system of documents developed and approved by a higher educational institution, taking into account the requirements of the labor market based on the educational standard.

The focus of the OBOR VO is focused on:

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

The direction of the program determines 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.

Qualification awarded to graduates of the educational program: master.

The labor intensity of the OBEP HE in the direction of training: 120 z.u.

Implementation period of the educational program: 2 years.

Goals and objectives of the main professional educational program:

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 clarify 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.

OBOR VO is implemented:

- on one's own;

- with partial use of e-learning (hereinafter - EE) and (or) with partial use of distance learning technologies;

- in English.

Specific features of OPOP VO:

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.

Partners and experts involved in the implementation of the program:

Federal State Budgetary Institution of Science "National Center for Marine Biology Research Center named after A.I. A.V. Zhirmunsky" of the Far Eastern Branch of the Russian Academy of Sciences (NNTsMB FEB RAS)

- Duizen Inessa Valerievna - an expert in the field of histology, cytology,

cell biology, Dr. med. Sciences, Corresponding Member. RAS, professor, deputy director for scientific work of the Federal State Budgetary Scientific Institution "National Scientific Center for Marine Biology named after A.V. Zhirmunsky FEB RAS

Federal State Budgetary Institution of Science "Federal Scientific Center for Biodiversity of Terrestrial Biota of East Asia" FEB RAS

– Bulgakov Victor Pavlovich – expert in the field of molecular biotechnology, Doctor of Biology, Corresponding Member of the Department of Biological Sciences of the Russian Academy of Sciences with a degree in Biotechnology, Professor, Chief Researcher of the Laboratory of Bioengineering, FGBUN "Federal Scientific Center for Biodiversity of Terrestrial Biota of East Asia" FEB RAS

A graduate with a master's degree can hold the following positions:

- researcher at institutions of the Russian Academy of Sciences and the Russian Academy of Medical Sciences;
- teachers of higher medical institutions;
- medical center workers.

Possible places of employment for a graduate may be: medical clinics, a 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, Institute of Biology and Soil Science FEB RAS, Pacific Institute of Bioorganic Chemistry FEB RAS, private medical clinics involved in IVF, modern clinics using cell technologies in reproductive medicine, burn therapy, transfusiology and various areas of transplantology, medical diagnostic centers, research and testing laboratories of industrial enterprises.

Disciplines (modules), practices ("Molecular biology of the cell", "Molecular and cellular mechanisms of carcinogenesis", "Molecular genetics, human genetics", "Biomedical cell technologies", "Molecular bioengineering", "Reproduction and differentiation of cells", "Neurobiology" , "Pathological histology") provide the formation of universal, general professional and professional competencies.

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.

FEFU forms its educational system in accordance with its specifics, traditions, strategic priorities for the development of the Far East and the mission of the university in the Asia-Pacific region, the global educational space, represents the value-normative, methodological, methodological and technological

foundations for organizing educational activities at the present stage of development university.

Head of the educational program  V.V. Kumeiko