

ЛД-21 ИИ

Federal State Budgetary Educational Institution of Higher Education  
«North-Ossetia State Medical Academy»  
of the Ministry of Healthcare of the Russian Federation



APPROVED

Rector of FSBEI HE NOSMA

MOH Russia

O.V. Remizov

May 24, 2023

**EDUCATIONAL TRAINING PROGRAM OF DISCIPLINE**

**«Histology,embryology,cytology»**

the main professional educational program of higher education - specialty program in the  
specialty 31.05.01 General Medicine, approved in 24.05. 2023

Form of education Full-time

The period of development 6

Department of Biology and histology

Vladikavkaz, 2023

The educational training program of the discipline is based on:

1. Federal State Educational Standard of Higher Education on specialty 31.05.01 General Medicine, approved by the Ministry of Education and Science of the Russian Federation on August 12, 2020 №988
2. Academic plan on specialty 31.05.01 General Medicine (ЛД-21-01-21ин, ЛД-21-02-22ин, ЛД-21-03-23ин), approved by the Scientific Council of the Federal State Budgetary Educational Institution of Higher Education «North-Ossetia State Medical Academy» of the Ministry of Healthcare of the Russian Federation in 24.05.2023, Protocol №8.

The educational training program of the discipline was approved at a meeting of the department of Biology and histology from in 18.05.2023 Protocol №7.

The educational training program of the discipline was approved at a meeting of the central coordinating training and methodological council in 23.05.2023, Protocol №5.

The educational training program of the discipline was approved by the Scientific Council of the State Medical University of the Federal State Budgetary Educational Institution of Higher Education «North-Ossetia State Medical Academy» of the Ministry of Healthcare of the Russian Federation in 24.05.2023, Protocol № 8.

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## **Contents of the training program**

1. The name of the discipline;
2. List of planned results of training in the discipline, correlated with the planned results of the development of the educational program;
3. Indication of the place of the discipline in the structure of the educational program;
4. The amount of discipline in credit units, indicating the number of academic or astronomical hours allocated to the contact work of students with the teacher (by types of training sessions) and the independent work of students;
5. Content of the discipline, structured according to topics (sections) indicating the number of academic or astronomical hours assigned to them and types of training sessions;
6. List of educational and methodological support for independent work of students in discipline;
7. Estimates of evaluation tools for conducting intermediate certification of trainees in discipline;
8. List of basic and additional educational literature necessary for mastering the discipline;
9. List of resources of the information and telecommunication network "Internet", necessary for mastering the discipline;
10. Methodical instructions for students to learn the discipline;
11. List of information technologies used in the implementation of the educational process for discipline, including a list of software and information reference systems (if necessary);
12. A description of the material and technical base necessary for the implementation of the educational process for discipline.
13. Using of internet technologies and distance learning technologies

**2. The list of expecting results of the training discipline and results of development of the educational program**

№ №	Competency number / index	Contents of the competency	Lesson topic	Content of competence (or part thereof)	Results of development		
					know	to able to	to own
1	2	3	4	5	6	7	8
1	GPC-5 (ОПК-5)	The ability to assess morphological and functional physiological states and pathological processes in the human body for solving professional problems	Cytology	ИД-3 ОПК-5 Determines morphofunctional, physiological conditions and pathological processes	Cell structure. The main provisions of the cell theory. The structure of cell membranes. Intercellular contacts. Acellular tissue structures. The structure and function of cell organelles at the microscopic level	Identify cells of various shapes due to their functions; explain the differences in the structure of free and contact surface of the cell. Identify at microscopic level, different types of organelles and inclusions based on their structural and cytochemical features. Determine the structural components of the nucleus.	Skills of microscopic examination and analysis of histological preparations.
2	GPC-5 (ОПК-5)	The ability to assess morphological and functional physiological states and pathological processes in the human body for solving professional problems	General histology	ИД-3 ОПК-5 Determines morphofunctional, physiological conditions and pathological processes	Students need to know the structure (cellular composition, intercellular substance) the localization and function of all tissues	Define and differentiate the histological tissue structures in micropreparations.	Skills of microscopic examination and analysis of histological preparations.

3	GPC-5 (ОПК-5)	The ability to assess morphological and functional physiological states and pathological processes in the human body for solving professional problems	Embryology	ИД-3 ОПК-5 Determines morphofunctional, physiological conditions and pathological processes	All the studied theoretical material.		Skills of microscopic examination and analysis of histological preparations.
4	GPC-5 (ОПК-5)	The ability to assess morphological and functional physiological states and pathological processes in the human body for solving professional problems	Private histology	ИД-3 ОПК-5 Determines morphofunctional, physiological conditions and pathological processes	Main morphofunctional and histogenetic characteristics of epithelial tissues. The structure of the exocrine glands.	Define and identify epithelial tissue in the preparations; explain the mechanisms of the secretory process in glandular epithelial cells.	Skills of microscopic examination and analysis of histological preparations.

### 3. The place of discipline in the structure of the educational program:

Discipline «Histology, embryology, cytology» belongs to the mandatory part of the Block 1 of the GEF HE in the specialty 31.05.01 "General Medicine".

### 4. The volume of the discipline and types of academic work

Total labor intensity of the discipline is **7 credit units, 252 hours.**

№	Type of educational work		Total credit units	Total hours	Semesters		
					№ 2	№ 3	
					hours	hours	
1	2		3	4	5	6	
1	<b>Contact work of students with an instructor(total), including::</b>		-	<b>160</b>	<b>80</b>	<b>80</b>	
2	Lectures (L)		-	36	18	18	
3	Practical training (Pt), Seminars (C)		-	124	62	62	
4	<b>Independent work of the student, including:</b>		-	<b>56</b>	<b>28</b>	<b>28</b>	
5	Type of Intermediate Grading (G)	exam (E)	-	36		36	
6	<b>TOTAL: Total time required per hour.</b>		<b>Total hours.</b>	-	<b>252</b>	<b>108</b>	<b>144</b>
			<b>Total credit units (3ET)</b>		<b>7.0</b>	<b>3.0</b>	<b>4.0</b>

### 5. Content of discipline

№/п	№ semester	Name of topic (section) discipline	Form of ongoing performance control				total	
			L	PC	IWS			
1	2	3	4	5	6	7	8	
2	2	Cytology	4	12	6	22	<ul style="list-style-type: none"> <li>• quiz,</li> <li>• test,</li> <li>• diagnostics micropreparations</li> </ul>	
3	2	General histology	12	32	14	58	<ul style="list-style-type: none"> <li>• quiz,</li> <li>• test,</li> <li>• diagnostics micropreparations</li> </ul>	
4	2	Embriology	2	18	8	28	<ul style="list-style-type: none"> <li>• quiz,</li> <li>• test,</li> <li>• diagnostics micropreparations</li> </ul>	

4	3	Private histology	18	62	28		<ul style="list-style-type: none"> <li>• quiz,</li> <li>• test,</li> <li>• diagnostics micropreparations</li> </ul>
5	3	Examination				36	
<b>TOTAL:</b>			<b>36</b>	<b>160</b>	<b>56</b>	<b>252</b>	

**6. List of training and methodological support for the independent work of students on discipline**

<b>№/p</b>	<b>№ semester</b>	<b>Name of educational-methodical development</b>
1.	2	AkoevaL.A., Gireyeva L.A.,Tabolova L.S. Blood and blood formation
2.	3	AkoevaL.A..GireyevaL.A..TabolovaL.S. Anatomical and physiological features of blood and respiratory organs in children
3.	3	AkoevaL.A..GireyevaL.A..TabolovaL.S. The immune system and immune cells
4.	2-3	AkoevaL.A..GireyevaL.A..TabolovaL.S. Toolkit for students to practical classes in histology Part 1
5.	3	Akoeva L.A.,GireyevaL.A..Tabolova L.S. Toolkit for students to practical classes in histology of the 2.
6.	2	AkoevaL.A..GireyevaL.A..Tabolova L.S.Workbook for histology, cytology, embriologii.ch.1.
7.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S.Workbook for histology, cytology, embriologii.ch.2.
8.	2	AkoevaL.A..GireyevaL.A..TabolovaL.S.Workbook for histology, cytology, embriologii.ch.1.
9.	2-3	AkoevaL.A..GireyevaL.A..Tabolova L.S.Guidelines for the implementation of self-vneuditornoy work of students for practical classes in histology. 2009
10.	2	AkoevaL.A..GireyevaL.A..Tabolova L.S. Guide for practical classes in histology for students medical, pediatric, medical-prophylactic faculty (EMA).
11.	2	AkoevaL.A..GireyevaL.A..TabolovaL.S.Guidelines for the implementation of an independent extracurricular CDS on histology (1 semester)
12.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Guidelines for the implementation of the CDS by histology (semester 2)
13.	2	AkoevaL.A..GireyevaL.A..Tabolova L.S. Guidelines for the CDS on histology course 1
14.	2	AkoevaL.A..GireyevaL.A..Tabolova L.S. Guidelines for the CDS 1 year medical, pediatric, FPM faculties
15.	2	AkoevaL.A..GireyevaL.A..Tabolova L.S. Methodical development "autonomic nervous system" for the implementation of the CDS for the 1st year students
16.	2	AkoevaL.A..GireyevaL.A..TabolovaL.S.Methodical development for the implementation of the CDS by histology Part 1
17.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Methodical development for the implementation of the CDS by histology Part 2
18.	2-3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Workbook for practical classes and students' independent work of medical, pediatric, medical-preventive and dental faculties.
19.	2-3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Tool Age histology. Blood. Organs

		of hematopoiesis. Bodies of circulation for students medical, pediatric, medical-preventive and dental faculties.
20.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Tool Age histology. Respiratory system. Respiratory students medical, pediatric, medical-preventive and dental faculties.
21.	2	AkoevaL.A..GireyevaL.A..Tabolova L.S. Workbook for practical classes and students' independent work 1 year medical faculty (Part I),
22.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Workbook for practical classes and students' independent work 2 courses of medical faculty (part II),
23.	2-3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Workbook for practical classes and students' independent work of the medical faculty, part 1, 2.
24.	2-3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Workbook for practical classes and students' independent work of the medical faculty, part 1, 2.
25.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Textbook of histology for students of medical, pediatric, medical-preventive and dental faculties "endocrine system. The central regulatory formation of the endocrine system. Age-related changes
26.	2-3	AkoevaL.A..GireyevaL.A..TabolovaL.S.Workbook for practical classes and students' independent work of the medical faculty, part 1, 2.
27.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Textbook of histology for students of medical, pediatric, medical-preventive and dental faculties "Age histology. Morpho-functional features large digestive glands "
28.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Textbook of histology for students of medical, pediatric, medical-preventive and dental faculties "Age histology. Endocrine system. Morphology and function of peripheral glands"
29.	2-3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Workbook for practical classes and students' independent work of the medical faculty, part 1, 2.
30.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Textbook of histology for students medical, pediatric, medical-preventive and dental faculties "Age histology. Morphological and functional features of the digestive process,
31.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Textbook of histology for students medical, pediatric, medical-preventive and dental faculties "Age histology. Morphological and functional features of the middle portion of the digestive system. Stomach "

### 7. Estimates tools for interim assessment of students on discipline

<b>№/ p</b>	<b>The list of competencies</b>	<b>№ semester</b>	<b>Indicator of assessment</b>	<b>The criterion of evaluation</b>	<b>Scale of assessment</b>	<b>Name and of assessment tools</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
	GPC-5	2-3	See standard of education quality assessment, approved by order of the rector of North-Ossetian State	See standard of education quality assessment, approved by order of the rector of North-Ossetian State Medical Academy	See standard of education quality assessment, approved by order of the rector of North-	exam cards, standards of test items, cards on practical skills



			Medical Academy of 10.07.2018 №264/o	of 10.07.2018 №264/o	Ossetian State Medical Academy 10.07.2018 №264/o	
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### 8. List of the basic and additional educational literature necessary for the development of the discipline

п/№	Name	Author (s)	Year, place of publication	Number of copies	
				at library	at department
1	2	3	4	5	6
<b>Main literature</b>					
1.	Wheater's functional histology : a text and colour atlas	B.Young, G.O'Dowd, P. Woodford	Churchill livingstoneelsevier, 2014	43	
2.	Cell biology	Thomas D.Pollard et al.	Philadelphia : Elsevier, Book aid international, 2017	50	
<b>Additional literature</b>					
3.	Атлас гистологии : атлас	ред У.Велш	М.:ГЭОТАР-Медиа, 2011	2	
4.	Histology and cell biology	Kurt E. Johnson	Baltimore : Williams & Wilkins, 1991	1	
5.	Color atlas of histology	Gartner L., Hiatt J.	Baltimore : Williams & Wilkins, 1990	1	
6.	Terminologia Histologica. Международные термины по цитологии и гистологии человека с официальным списком русских эквивалентов	ред. В.В. Банин	М.:ГЭОТАР-Медиа, 2009	1	
7.	Terminologia Embryologica. Международные термины по эмбриологии человека с официальным списком русских эквивалентов	Колесников Л.Л.	М.:ГЭОТАР-Медиа, 2014.	«Консультант студента» <a href="http://www.studmedlib.ru/book/ISBN9785970430804.html">http://www.studmedlib.ru/book/ISBN9785970430804.html</a>	

## 9. The list of resource information and telecommunication network "Internet", necessary for the development of discipline

<http://donhist.narod.ru/resurs.htm> Educational Web Resources by histology, cytology and embryology

[http://www.meddean.luc.edu/lumen/MedEd/Histo/frames/histo\\_frames.html](http://www.meddean.luc.edu/lumen/MedEd/Histo/frames/histo_frames.html)- Histology, atlas for self-study and self-medication

<http://www.meddean.luc.edu/lumen/MedEd/Histo/virtualhistology.htm>- это virtual histology, virtual histology atlas for independent analysis of the drug

<http://books-up.ru/pdfreader/2-245506> Guide histology v.2

[www.histology.narod.ru](http://www.histology.narod.ru) – course practical classes in histology and embryology

<http://humbio.ru/> - Course knowledge base of human biology, cell biology and reproduction and development

<http://hist.yma.ac.ru/index.html> - (<http://hist.yma.ac.ru/mr/mr00.htm>) Forums to control the acquired knowledge of histology

<http://www.histology.narod.ru/lectures.htm> lectures on histology

<http://www.histol.chuvashia.com/atlas/atlas-enter-ru.htm> atlas of micrographs Gunina

<http://nsau.edu.ru/images/vetfac/images/ebooks/histology/> contains 2 electronic book: Guide-Atlas of Histology, Cytology and Embryology (with the application "Exam") - SL Kuznetsov, NN Mushkambarov VL Goryachkina and tests in histology, cytology and embryology (for self-control ) NN Mushkambarov, SL Kuznetsov

<http://meduniver.com/Medical/Book/19.html> e-books on histology on various sections of histology

[http://www.morphology.dp.ua/\\_mp3/intro.php](http://www.morphology.dp.ua/_mp3/intro.php) video lectures on histology allow the use of remote forms of training histology.

<http://cytohistology.ru/> - video lectures (and textual material) Histology includes cytology, histology, and all sections of the case studies

«Консультантстудента» [www.studmedlib.ru/ru/book/ISBN9785970421307.html](http://www.studmedlib.ru/ru/book/ISBN9785970421307.html) Histology, embryology, cytology. Under red..E.G.Ulumbekova, M-GEOTAR- Media 2012

«student Consultant» [www.studmedlib.ru/ru/book/ISBN9785970426746.html](http://www.studmedlib.ru/ru/book/ISBN9785970426746.html) Histology, Cytology, Embryology: satin Under red..S.L.Kuznetsova. M. GEOTA - Media 2013Консультантстудента» [www.studmedlib.ru/ru/book/ISBN978529004212.html](http://www.studmedlib.ru/ru/book/ISBN978529004212.html) histology Guide Volume 1, Ed. R.K.Danilova. SPb.: Spets.lit 2011

student Consultant [www.studmedlib.ru/ru/book/ISBN9785299004311.html](http://www.studmedlib.ru/ru/book/ISBN9785299004311.html) Histology Manual Volume 2, Ed. R.K.Danilova. SPb.: Spets.lit 2011

student Consultant» [www.studmedlib.ru/ru/book/ISBN97859704238468.html](http://www.studmedlib.ru/ru/book/ISBN97859704238468.html) Histology. Diagrams, tables and case studies on the histology of the private person. SY Vinogradov et al M.GEOTAR -. Media 2012.

## 10. Guidelines for students to develop the discipline

Training consists of contact work (160 hours) including a lecture course (36 hours) and laboratory and practical classes (124 hours) and independent work (56 hours).

The main study time is allocated to practical work on the study of microscopic preparations, electron micrographs, the decision of test tasks and situational problems with clinical orientation. Working with educational literature it is regarded as a kind of academic work in the discipline and executed within hours devoted to its study. Each student has access to the library collections of the department and Academy.

In accordance with the requirements of the GEF inside discipline "Histology, embryology, cytology" marked sections: 1. History of the development of histology, cytology and embryology; 2. Tissue engineering; 3.Cytology; 4. General histology; 5. Private histology; 6. Embryology (Variation part). Each section is divided into topics. At the same themes and topics in the sections are constructed in such a way as to ensure a continuous chain of information in

which each subsequent topic is based on the information platform set up in the study of the previous threads. Each topic is given a certain number of hours divided into lectures, practical classes and control.

Methodically practical training consists of three interconnected structural units: communication with the student, monitoring the level of knowledge and independent work of the student.

In the process of communication with the student teacher checks the basic knowledge of students - using additional teaching aids (films, computer presentations, manuals, etc.) gives them more information. Individual work of students includes a study and sketch histological preparations, topical solution of situational problems, test tasks and others. Current control of knowledge assimilation. It consists of the control of knowledge of the histological structure of the studied tissues and organs, the ability to show their structural elements in the histological preparation, control solutions of situational problems and test tasks.

At the end of each section students have control test and diagnostics of histological preparations. At the end of the third semester final control is carried out in the form of examination. The exam consists of three stages, including the test control, control of practical skills (the ability to read histologic and electron micrographs) and an interview on the thematic of situational problems with clinical orientation.

Knowledge control is carried out on the basis of score-rating system.

Students' work in a group creates a sense of community and sociability.

Individual work with histological preparations contributes to a deontological behavior, neatness, discipline.

Individual work with literature, writing essays, preparation of reports (reporting) forms the ability to analyze the health and social problems, the ability to use in practice the achievements of the natural sciences, medico-biological and clinical sciences in various kinds of professional and social activities.

Different types of training activities, including independent work of students, promote the mastery of culture of thinking ability in written and spoken language is logically correct to issue its results; readily to the formation of a systematic approach to the analysis of health information, the perception of innovation; forming ability and willingness to self-improvement, self-fulfillment, personal and objective reflection.

Different types of training activities form ability in terms of science and practice to the reevaluation of experience, analysis of its features, the ability to acquire new knowledge, use different forms of training, information and education technology.

## **11. The list of information technologies used in the implementation of the educational process on discipline**

- Microsoft word
- Microsoft excel
- Microsoft Power Point
- Adobe photoshop
- Adobe Acrobat
- Adobe Finereader

## **12. Description of the material and technical base necessary for the implementation of the educational process on discipline**

Department of biology and histology (histology) is located in the building number 2, on the fifth floor. Includes 5 classrooms (the area of which is as follows: 16.8 m<sup>2</sup>, 16.6 m<sup>2</sup>, 16.8 m<sup>2</sup>, 16.9 m<sup>2</sup>, 18.2 m<sup>2</sup>), senior lecturer of the department's office (17.1 m<sup>2</sup> area), methodical cabinet (an area of 17.2 m<sup>2</sup>), assistant (area of 17.2 m<sup>2</sup>), laboratory (area of 16.9 m<sup>2</sup>), material room (area of 17.3 m<sup>2</sup>), lounge (46.4 m<sup>2</sup> area). The total area of the premises is 219.2 m<sup>2</sup>.

Training rooms have 18 working places for students, chalkboard. At the working places students have individual lights, microscopes available, a full set micropreparations.

<b>№/ p</b>	<b>Name of equipment</b>	<b>number</b>	<b>Technical condition</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Special equipment</b>			
	Microscope, number .	41	satisfactory
	Multimedia Complex (laptop, projector, screen)	2	
	TV-set	2	
	videorecorder	1	
	Computer	3	
<b>Phantoms</b>			
	—	—	—
<b>Fake</b>			
	Histological slides are	650	satisfactory
	tables	100	satisfactory
	Multimedia presentations	25	

### 13. Conducting educational activities using e-learning and distance learning technologies

In the context of the introduction of restrictive measures (quarantine) associated with an unfavorable epidemiological situation, the threat of the spread of a new coronavirus infection and other force majeure events that do not allow full-time training, it is possible to study this discipline or part of it using e-learning and distance educational technologies.

Teaching the discipline in the above situations will be carried out through the development of an electronic course with access to video lectures and interactive course materials: presentations, articles, additional materials, tests and various assignments. When conducting training sessions, monitoring progress, as well as intermediate certification of students, platforms of the electronic information and educational environment of the academy and / or other e-learning systems recommended for use in the academy, such as Moodle, Zoom, Webinar, etc.

Lectures can be presented in the form of audio, video, "live lectures", etc.

Conducting seminars and practical classes is possible in on-line mode both in synchronous and asynchronous modes. Seminars can be conducted in the form of web conferences.