Appx 2
to the order of _____ 2025 # _____

NATIONAL UNIVERSITY OF
LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE
Department of Vertebrate Biomorphology named after Academician
V. H. Kasianenko

" **APPROVED** "
Faculty of Veterinary Medicine
June 04, 2025

CURRICULUM OF ACADEMIC DISCIPLINE
"CYTOLOGY, HISTOLOGY, EMBRYOLOGY"

Field of knowledge **H – Agriculture, forestry, fisheries and veterinary medicine**
Specialty **H 6 – Veterinary Medicine**
Academic programme **Veterinary Medicine**
Faculty of Veterinary Medicine
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Kyiv – 2025

Description of the discipline “Cytology, Histology, Embryology”

The academic discipline Cytology, Histology, Embryology is compiled in accordance with the educational and professional training program for the ED Master of the specialty H 6 Veterinary Medicine of the full term of study. It is fundamental in the training of a veterinarian. Together with anatomy, physiology and biochemistry, they form the necessary basis for students to successfully master paraclinical and clinical disciplines. The discipline Cytology, Histology, Embryology includes four sections: Cytology, Embryology, General Histology and Special Histology. Each of them has its own subject of study. Cytology studies the structure and function of cells, Embryology – the development and structure of germ cells and embryo development, General Histology – the development, structure and function of tissues, Special Histology – the structure of organs of their systems and apparatus. The subject of study of this discipline is the micro- and submicroscopic structure of the structural components of the organism, and their formation in the process of embryonic development.

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Academic degree, specialty, academic programme	
Academic degree	*Master’s*
Specialty	*H 6 Veterinary Medicine*
Academic programme	*Veterinary Medicine*
Characteristics of the discipline	
Type	Compulsory
Total number of hours	180
Number of ECTS credits	6
Number of modules	6
Form of assessment	Credit, Exam
Indicators of discipline for full-time form of study	
	Full-time education
Year of study	1, 2
Semester	2, 3
Lectures	60 hrs.
Practical classes	30 hrs.
Laboratory classes	60 hrs.
Self-study	30 hrs.
Number of hours per week for full-time students	5 hrs.

1. **Aim, objectives, competences and expected learning outcomes of the discipline**

The discipline "Cytology, Histology, Embryology" **aim** is the students' cognition of the patterns of the structure of the animal organism at the cellular, tissue and organ levels of the structural organization and its individual development.

The discipline "Cytology, Histology, Embryology" **objectives** (outcomes):

Students will be able to use light microscopes and will learn some histological techniques.

Students will be able to describe general ultrastructural features and functions of cells and their extracellular matrix.

Students will be able to describe the characteristic structural features and functions of each of the basic tissues.

Students will be able to describe the characteristic structural features and function of the animals' organs.

Students will know the ultrastructure of germ cells, histophysiology of fertilization, early embryonic development of vertebrates, differentiation of germs layers and axial organs.

Students will be able to identify the basic tissues and the most important organs when shown glass slides.

Students will be able to apply the information described above to successfully complete the clinical discipline that follow.

As a result of studying the discipline, the student should

***know*:** some histological techniques, micro- and ultrastructure and histophysiology of eukaryotic cells, structure and functions of epithelial, connective, muscle and nervous tissues, microstructure and function of systems and apparatuses of animal organs, micro- and ultrastructure of germ cells, histophysiology of fertilization, early stages of vertebrate animals embryogenesis, differentiation of germ layers and axial organs;

***able*:** master the light microscopy technique, have the skills of "reading" micrographs, determine the compartments of eukaryotic cell, determine the types of tissues and their varieties, determine the organs from which histological slides are made.

Acquisition of competencies:

First day competencies (FDC):

1. Act in a way that shows understanding of the ethical and legal framework within which veterinarians should work, including professional-, animal welfare-, client-, public health-, societal- and environmental -related aspects.

2. Understand scientific research methods, the contribution of basic and applied research to science and implementation of the 3Rs principle (Replacement, Reduction, Refinement).

4. Promote, monitor and contribute to maintaining health and safety of oneself, patients, clients, colleagues and the environment in the veterinary setting; demonstrate knowledge about the principles of quality assurance; apply principles of risk management in practice.

7. Prepare accurate clinical and client records, and case reports when necessary, in a form satisfactory to the relevant audiences.

8. Work effectively as a member of a multi-disciplinary team in the delivery of services and recognize the contribution of all team members.

9. Be able to review and evaluate literature and presentations critically.

10. Understand and apply principles of One Health to ensure veterinary Good Clinical Practice, and research-based and evidence-based veterinary medicine.

12. Use of professional capabilities to contribute to the advancement of veterinary knowledge and the One Health concept, in order to promote the health, safety and welfare of animals, people and the environment, as well as the United Nations Sustainable Development Goals.

15. Engage in self-audit and peer-group review processes on a regular basis in order to improve performance.

19. Develop appropriate treatment plans and administer treatment in the interests of the animals under their care with regard to the resources available and to appropriate public health and environmental considerations.

20. Attend in an emergency and perform first aid in common animal species. Prioritize situational urgency and allocate resources accordingly.

24. Use basic diagnostic equipment and carry out an examination effectively as appropriate to the case, in accordance with good health and safety practice and current regulations. Understand the contribution of digital tools and artificial intelligence in veterinary medicine.

Integral competence (IC):

The ability to solve complex tasks and problems in the field of veterinary medicine, which involves research and/or implementing innovations and is characterized by uncertainty of conditions and requirements;

General competences (GC):

7. Ability to conduct research at the appropriate level;

11. Ability to evaluate and ensure the quality of work performed;

Professional (special) competencies (PC):

1. The ability to establish the features of the structure and functioning of cells, tissues, organs, their systems and apparatus of the animals' organism of different classes and species - mammals, birds, fish and other vertebrates;

2. The ability to use tools, special devices, instruments, laboratory equipment and other technical means to carry out the necessary manipulations during professional activities;

Expected Learning Outcomes (ELO):

1. Know and correctly use the terminology of veterinary medicine.

3. To determine the essence of the physicochemical and biological processes that occur in animals' organism in normal and pathological conditions

5. Establish a link between the clinical manifestations of the disease and the results of laboratory tests.

2. **Program and structure of the discipline for:**
– full-time form of study

Modules and topics	Hours					
	weeks	total	including			
			lectures	pract	lab	self.st.
Content Module 1. Cytology						
Topic 1. Insight into Histology. Cell theory	1-2	7	2	1	2	1
Topic 2. Overview of eukaryotic cells. Cell theory. The chemical composition of cells	2-3	6	2	1	2	-
Topic 3. Structure of Eukaryotic Cell	3-4	7	2	1	2	1
Topic 4. Structure of Eukaryotic Cell	4-5	7	2	1	2	1
Topic 5. Structure of Eukaryotic Cell. Cell division	5-6	6	2	1	2	1
Quiz 1	6	2				1
Total for content module 1		**30**	**10**	**5**	**10**	**5**
Content Module 2. Embryology						
Topic 6. The structure, function and development of germ cells	6-7	7	2	1	2	1
Topic 7. Gametogenesis. General characteristics of embryogenesis	7-8	7	2	1	2	1
Topic 8. Differentiation of Germ Layers and Axial Organs. Embryogenesis of vertebrates	8-9	7	2	1	2	1
Topic 9. Embryogenesis of birds and mammals	9-10	7	2	1	2	1
Quiz 2	11	2				1
Total for content module 2		**25**	**8**	**4**	**8**	**5**
Content Module 3. General Histology						
Topic 10. General characteristics of tissues. Epithelia	10-11	6	2	1	2	1
Topic 11. Extracellular matrix. Connective tissue	11-12	6	2	1	2	-
Topic 12. Proper Connective Tissue	12-13	6	2	1	2	1
Topic 13. Supportive tissues	13-14	7	2	1	2	1
Topic 14. Muscle Tissue	14-15	7	2	1	2	-
Topic 15. Nervous tissue	15	6	2	1	2	1
Quiz 3	15	2				1
Total for content module 3		**35**	**12**	**6**	**12**	**5**

Content Module 4. Special Histology (Comparative Organology). Cardiovascular System. Lymphoid Organs. Endocrine System						
Topic 16. Cardiovascular System	1-2	7	2	1	2	1
Topic 17. Lymphoid Organs (Central organs)	2-3	7	2	1	2	1
Topic 18. Lymphoid Organs (Peripheral organs)	3-4	7	2	1	2	1
Topic 19. Endocrine System	4-5	7	2	1	2	1
Quiz 4	5	2				1
Total for content module 4		**25**	**8**	**4**	**8**	**5**
Content Module 5. Special Histology (Comparative Organology). Integumentary System. Digestive System. Respiratory System. Urinary System.						
Topic 20. Integumentary System	5-6	6	2	1	2	1
Topic 21. Digestive System (head gut)	6-7	6	2	1	2	-
Topic 22. Digestive System (anterior, middle and posterior gut)	7-8	6	2	1	2	1
Topic 23. Digestive System (extramural glands of the digestive system)	8-9	6	2	1	2	-
Topic 24. Respiratory System	9-10	7	2	1	2	1
Topic 25. Urinary System	10-11	7	2	1	2	1
Quiz 5	10	2				1
Total for content module 5		**35**	**12**	**6**	**12**	**5**
Content Module 6. Special Histology (Comparative Organology). Reproductive System. Nervous System. Sense organs						
Topic 26. Female Reproductive System	11-12	6	2	1	2	1
Topic 27. Male Reproductive System	12-13	7	2	1	2	-
Topic 28. Nervous System	13-14	6	2	1	2	1
Topic 29. Sense organs (eye)	14-15	7	2	1	2	1
Topic 30. Sense organs (ear)	15	7	2	1	2	1
Quiz 6	15	2				1
Total for content module 6		**30**	**10**	**5**	**10**	**5**
Total hours		**180**	**60**	**30**	**60**	**30**

3. Topics of lectures

№	Topic titles	Hours
1	Insight into Histology	2
2	Cytology. Overview of eukaryotic cells. Cell theory. The chemical composition of cells	2
3	Cytology. The structure of the eukaryotic cell	4
4	Cytology. The structure of the eukaryotic cell. Cell division	2
5	Embryology. Structure of Germ Cells	2
6	Embryology. Development of germ cells. Early embryonic development	2
7	Embryology. Differentiation of Germ Layers and Axial Organs.	2
8	Embryology. Embryogenesis of Amphioxus, Fish and Amphibians	2
9	Embryology. Embryogenesis of Birds and Mammals	2
10	General Histology. General characteristics of tissues. Epithelia	2
11	General Histology. Connective tissue. Body fluids	2
12	General Histology. Proper Connective Tissue	2
13	General Histology. Supportive tissues	2
14	General Histology. Muscle Tissue	2
15	General Histology. Nervous tissue	2
16	Special Histology (Comparative Organology). Cardiovascular System	2
17	Special Histology (Comparative Organology). Lymphatic (Lymphoid) Organs. (Overview of the Immune System)	4
18	Special Histology (Comparative Organology). Endocrine System	4
19	Special Histology (Comparative Organology). Integumentary System	2
20	Special Histology (Comparative Organology). Digestive System	4
21	Special Histology (Comparative Organology). Respiratory System	2
22	Special Histology (Comparative Organology). Urinary System	2
23	Special Histology (Comparative Organology). Female Reproductive System	2
24	Special Histology (Comparative Organology). Male Reproductive System	2
25	Special Histology (Comparative Organology). Nervous System	2
26	Special Histology (Comparative Organology). Sense Organs	2

4. Topics of laboratory and practical classes

№	Topic titles	Hours
1	Microscope. How to use microscope. Histological laboratory	2
2	Paraffin technique. Hematoxylin and eosin staining	2
3	General morphology of eukaryotic cells. Mitochondria. Endoplasmic reticulum. Golgi complex	2
4	Centrioles. Cytoplasmic inclusions (nutritive, secretory, pigment)	2
5	Nucleus. Mitosis. Amitosis	2
6	Structure of spermatozoa in mammals and bird. Structure of mammal oocyte	2
7	Fertilization. Syncaryon. Zygote cleavage in Lancet fish and Amphibia. Blastula	2
8	Unequal cleavage. Blastula	2
9	Frog's neurula. Gastrulation in birds	2
10	Germ layers and axial organs of chick embryo	2
11	Fetal membranes of birds and mammals. Placenta	2
12	Surface epithelia	2
13	Blood of mammals, birds, amphibians	2
14	Mesenchyme and mucous connective tissue. Reticular tissue. Adipose tissue	2
15	Loose connective tissue. Dense connective tissue	2
16	Cartilage and bone tissue	2
17	Smooth muscle tissue. Skeletal and cardiac muscle tissue	2
18	Neurons. Chromatophilic substance. Neurofibrils	2
19	Neuroglia. Nerve fibers (unmyelinated and myelinated). Synapses	2
20	Heart. Elastic and muscular arteries	2
21	Muscular vein. Blood capillaries	2
22	Red bone marrow. Thymus. Bursa of Fabricius	2
23	Lymph node. Spleen. Palatine tonsils	2
24	Hypophysis	2
25	Adrenal glands. Thyroid gland. Parathyroid gland	2
26	Skin with hair. Skin without hair. Eyelid	2
27	Mammary gland (lactating and non-lactating)	2
28	Horn skin derivatives. Hooves	2
29	Tooth crown and root. Development of tooth	2
30	Tongue (filiform and foliate papilla). Salivary glands	2
31	Esophagus	2
32	Glandular stomach	2
33	Avian stomach	2
34	Compound stomach (rumen, reticulum, omasum)	2
35	Duodenum, jejunum, colon	2
36	Liver. Pancreas	2
37	Trachea. Mammal's and bird's lungs. Blood/air barrier (scheme)	2
38	Kidney. Ureter. Scheme of nephron	2
39	Ureter. Urinary bladder	2
40	Ovary. Corpus luteum. Uterine tube (oviduct)	2
41	Uterus. Vagina	2
42	Testes. Epididymis. Prostate	2
43	Spinal cord. Cerebral cortex. Cerebellum	2
44	Dorsal root ganglia. Nerve	2
45	Posterior wall of eyeball. Cornea. Organ of Corti	2

5. Topics for self-study

№	Topic titles	Hours
1.	Histological techniques	1
2.	Chemical properties of cell membrane	1
3.	Cell contacts, peroxisomes, microtubules, microfilaments	1
4.	Cilia and flagella	1
5.	Non-cellular structures of organism	1
6.	Structure of spermatozoa in birds	1
7.	Structure of amphibian and fish oocytes	2
8.	Stages of birds and mammals' development	2
9.	Postembryonic hematopoiesis	1
10.	Ultrastructure of collagen fibers	1
11.	Ultrastructure of actin and myosin myofilaments	1
12.	Macroglia and microglia	1
13.	Reflex arc. Regeneration of nerve tissue.	1
14.	Structure of arterioles and venules	1
15.	Structural features of the avian immune organs	1
16.	Structure of tonsils and aggregated lymphoid nodules	1
17.	Diffuse neuroendocrine system. APUD system	2
18.	Structural features of skin in different species of domestic animals	1
19.	Development of liver and pancreas. Endocrine part of pancreas	1
20.	Structure of glands of the perianal region	1
21.	Outer and Inner breathing. The structure of birds' lung	1
22.	Histophysiology of the kidney	1
23.	Structural features of bird's ovary and oviduct	1
24.	Structural and functional features of autonomic nervous system	2
25.	Vestibular and auditory apparatus	2

6. Tools for assessing expected learning outcomes:

- exam;
- credit;
- module tests;
- presentation of laboratory and practical works.

7. Teaching methods

- verbal method (lecture, discussion, interview, etc.);
- practical method (laboratory, practical classes);
- visual method (illustration, demonstration);
- video method (remote, multimedia, web-based, etc.);
- self-study (completing assignments);
- individual research work.

8. Distribution of points received by students.

The assessment of students' knowledge and skills is conducted by means of a 100-point scale and is converted into national grades according to Table 1 of the current *Exam and Credit Regulations at NULES of Ukraine*.

8.1. Distribution of points according to types of educational activity

Type of educational activity	Learning outcomes	Evaluation
Module 1. Cytology		
Laboratory class 1.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 2.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 3.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 4.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 5.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Independent work 1.	Completion of the task “Features of the organelles structure” in the EEC	**5**
Independent work 2.	Completion of the task “Organelles classification” in the EEC	**5**
Independent work 3.	Completion of the task “Types of cells and their shapes” in the EEC	**5**
Modular test work 1.		**70**
Total by Module 1		**100**
Module 2. Embryology		
Laboratory class 1.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 2.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 3.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 4.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 5.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 6.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 7.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Independent work 1.	Completion of the task ‘Oocytes classification’ in the EEC	**3**

Independent work 2.	Completion of the task 'The embryogenesis of vertebrate animals' in the EEC	**3**
Independent work 3.	Completion of the task "Placenta classification" in the EEC	**3**
Modular test work 2.		**70**
Total by Module 2		**100**
Module 3. General Histology		
Laboratory class 1.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 2.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 3.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 4.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 5.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 6.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 7.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 8.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 9.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 10.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Independent work 1.	Completion of the task "Blood cells of mammals and birds" in the EEC	**1**
Independent work 2.	Completion of the task "Differentiation of tissue types" in the EEC	**1**
Modular test work 3.		**68**
Total by Module 3		**100**
Module 4. Special Histology. Cardiovascular, Lymphatic and Endocrine systems		
Laboratory class 1.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 2.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 3.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**

Laboratory class 4.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 5.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 6.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Independent work	Completion of the task “Differentiation of histological specimens” in the EEC	**12**
Modular test work 4.		**70**
Total by Module 4		**100**
Module 5. Special Histology. Integumentary system. Digestive, respiratory and urinary systems		
Laboratory class 1.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 2.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 3.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 4.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 5.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 6.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 7.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 8.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 9.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 10.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 11.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Independent work	Completion of the task “Differentiation of histological specimens” in the EEC	**7**
Modular test work 5.		**60**
Total by Module 5		**100**
Module 6. Special Histology. Reproductive, nervous systems and sense organs		

Laboratory class 1.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 2.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 3.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 4.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 5.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Laboratory class 6.	Working with a microscope and histological specimens. General conclusions. Preparation and submission of work	**3**
Independent work 1.	Completion of the final assignment in special histology (1) in the EEC	**6**
Independent work 2.	Completion of the final assignment in special histology (2) in the EEC	**6**
Modular test work 6.		**70**
Total by Module 6		**100**
Study work (by semester)		**(M1 + M2+M3)/3*0,7 ≤ 70**
Test/Exam		**30**
Total by course		**(Study work + Test/Exam) ≤ 100**

8.2. Scale of Assessment of Student Knowledge

Student's rating, points	National grading of exams and credits
90-100	excellent
74-89	good
60-73	satisfactorily
0-59	unsatisfactorily

8.3. Evaluation Policy

Deadlines and Exam Retaking Policy	Laboratory, independent and modular works must be submitted at the planned time before the end of the study of the current module. Violation of the deadlines without a good reason entitles the teacher to lower the grade. Reassignment of modular control work occurs in the presence of valid reasons (for example, hospital) and is allowed in the term before the end of the following module.
Academic Integrity Policy	Copying, use of mobile devices, and additional literature when writing modular tests, tests and exams are strictly prohibited.
Attendance Policy	Attendance at lectures and laboratory classes is mandatory for all students in the group. Late classes are not allowed. A lab coat is a must in laboratory classes. For objective reasons (for example, illness, international internship) training can take place according to an individual curriculum approved in a certain order. Missed lectures, after their processing by the applicant of higher education, are worked out in the form of an interview with the teacher. Missed laboratory classes are worked out by students in the laboratory of the department, information about the practice is entered into the departmental journal of the practice of missed classes.

9. **Educational and methodological support:**

- e-learning courses of discipline
  https://elearn.nubip.edu.ua/course/view.php?id=1330
  https://elearn.nubip.edu.ua/course/view.php?id=1680 ;
- Workbook «Cytology, Histology, Embryology» Part I. Special Histology (methods of microscopy, histological techniques, cytology, general embryology, general histology) for students ED «Master» Faculty of Veterinary Medicine specialty 211 «Veterinary Medicine». К.: НУБіП України, 2025. 88 р.;
- Workbook «Cytology, Histology, Embryology» Part II. Special Histology (Comparative Organology) for students ED «Master» Faculty of Veterinary Medicine specialty 211 «Veterinary Medicine». К.: НУБіП України, 2024. 78 р.

10. Recommended sources of information

Basic literature

1. Хомич В. Т. Лекції з цитології, ембріології та гістології свійських тварин: Навчальний посібник. К.: ТОВ "Аграр Медіа Груп", 2020. 296 с.
2. Новак В. П., Бевз О. С., Мельниченко А. П. Цитологія, гістологія, ембріологія: підручник за заг. ред. В. П. Новака (3-е вид., змін. і доп.) Львів: «Магнолія 2006», 2024. 436 с.
3. Хомич В. Т., Мазуркевич Т. А., Дишлюк Н. В., Стегней Ж. Г. Практикум з цитології, гістології та ембріології свійських тварин: Навчальний посібник /За редакцією В. Т. Хомича. К.: ЦП Компринт, 2019. 228 с.
4. Хомич В. Т., Мазуркевич Т. А., Дишлюк Н. В., Стегней Ж. Г. Цитологія, ембріологія і гістологія свійських тварин у запитаннях і відповідях. Навчальний посібник К.: Аграр Медіа Груп, 2019. 232 с.
5. Melnyk N. Histology, cytology and embryology. K., 2020. 370 c.
6. Ulrich D. Color atlas of embryology. Thieme, 1995. 383 p.
7. Hyttel P., Sinowatz F., Vejlsted M. Domestic Animal Embryology. Sounders Elsevier, 2010. 455 p.

Supporting literature

1. Хомич В. Т., Мазуркевич Т. А., Дишлюк Н. В., Стегней Ж. Г, Усенко С. І. Міжнародна ветеринарна гістологічна номенклатура. К.: ФОП Ямчинський О.В., 2019. 276 с
2. Гістологія, цитологія, ембріологія. Національний підручник // Луцик О. Д., Чайковський Ю. Б. (за ред.) Вінниця: Нова Книга, 2024. 592 с.
3. Banks W.J. Applied Veterinary Histology. 1993. 527 p.
4. Dellmann H.-D., Carithers J.R. Cytology and Microscopic Anatomy. 1996. 406 p.
5. Bacha W.J., Wood L.M. Color Atlas of Veterinary Histology. 1990. 269 p.

Information Resources

1. « LUMEN Histology from Loyola. Excellent slides plus explanatory text. *** http://www.meddean.luc.edu/lumen/MedEd/Histo/frames/histo_frames.html
2. http://lecannabiculteur.free.fr/SITES/UNIV%20W.AUSTRALIA/mb140/Lectures.htm
3. https://histologyguide.com/
4. https://ohiostate.pressbooks.pub/vethisto/