


<p>             ОҢТҮСТІК ҚАЗАҚСТАН  <b>MEDISINA</b>  <b>AKADEMIASY</b>              «Оңтүстік Қазақстан медицина академиясы» АҚ           </p>		<p>               SOUTH KAZAKHSTAN  <b>MEDICAL</b>  <b>ACADEMY</b>              АО «Южно-Казахстанская медицинская академия»           </p>
Department of «Topographic anatomy and pistology»		52-11
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## LECTURE COMPLEX

Discipline: "Normal cardiorespiratory system"


Discipline code: NCS 2207

EP name: 6B10115 "Medicine"

Amount of study hours/credits: 30/1,0

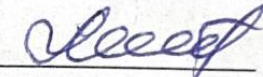
Course and semester of study: 2/4


The volume of lectures: 2 hours.

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The lecture complex was developed in accordance with the working curriculum of the discipline "Normal cardiorespiratory system" (syllabus) and discussed at a meeting of the department of "Topographic anatomy and histology"

Protocol No. 1 from "03" 09 2024

Head of the department, c.m.s., acting professor  Murzanova D.A.

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## Lecture No. 1.

### 1. Topic: Histological structure of the cardiovascular system.

#### 2. Purpose:

- To give an idea of the development and histophysiology of arteries, their features in childhood.
- To give an idea of the development and histophysiology of the microcirculatory bed. To give an idea of the development and structure of veins of muscular and non-muscular type, valvular apparatus, age-related features of veins, lymphatic vessels.

To give an idea of the development and histophysiology of the heart, its features in childhood.

#### 3. Lecture abstracts:

##### 1. Introduction to the histology of the cardiovascular system:

- Definition of histology as the study of tissues at the microscopic level.
- Substantiation of the importance of studying histology for understanding the structure and functions of organs.

##### 2. The structure of the heart tissue:

- Description of the main types of heart tissues: myocardium, endocardium, epicardium.
- Consideration of the structure of the myocardium: cardiomyocytes, intercallary discs, endomysium.
- Explanation of the role of cardiomyocytes in the contractile function of the heart.

##### 3. Morphology of the vascular system:

- Description of the structure of arteries, veins and capillaries.
- Study of the layers of the arterial wall: the inner shell (endothelium), the middle shell (smooth muscle, elastic fibers), the outer shell (outer elastic layer).
- Discussion of the features of the structure of veins: fewer muscle and elastic fibers, valves.

##### 4. Microscopic structure of capillaries:

- Description of the capillary endothelium.
- Study of the features of the capillary structure in various tissues and organs.

##### 5. The physiological role of blood vessels:

- Discussion of the role of arteries in transporting blood with oxygen and nutrients to tissues.
- Consideration of the functions of veins in blood drainage and heat exchange.
- Explanation of the role of capillaries in gas exchange and metabolism between blood and tissues.

##### 6. Conclusion:

- Summarizing the main points of the lecture.
- Emphasizing the importance of understanding the histology of the cardiovascular system for the diagnosis and treatment of cardiovascular diseases.


#### 4. Illustrative material: Presentation, including:

- color micrographs of histopreparations
- electronograms, diagrams, drawings

#### 5. Literature:

##### Main literature

1. Inderbir Singh. Textbook of Human Histology. With Color Atlas and Practical Guide/8 th Edition. Jaypee Brothers Medical Publishers .2016.-302 p. Перевод Гистология человека

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2. Dudek Ronald W. Embryology / Ronald W. Dudek. - 5th ed. - [s. l.] : Wolters Kluwer, 2014. - 158 p. Перевод заглавия: Эмбриология
3. Gartner Leslie P. Cell Biology and Histology / Leslie P. Gartner. - 8th ed. - [s. l.] : Wolters Kluwer, 2019. - 436 p. - (BRS. Board Review Series)Переводзаглавия: Клеточнаябиологияигистология

### **Additional literature**

Textbook of Human Histology. Inderbir Singh /Sixth Edition/Inderbir Singh 2010.-386 p.  
Перевод Учебник по гистологии человека

### **Electronic publications**

1. ATLAS OF HISTOLOGY with Functional Correlations. Thirteenth Edition, Wolters Kluwer.2017.- 1102 p.
2. Theory and practice of Histological techniques.Eighth edition.Elsevier Limited.2019.-554 p.
3. Textbook of Human Histology.With Color Atlas and Practical Guide/8 th Edition.Jaypee Brothers Medical Publishers .2011.-386 p.
4. USMLE Step 1.Lecture Notes 2018. by Kaplan.2018.-425 p/
5. Zhumabayeva, S.E., Boken, T.S. Cytology and histology : Educational-methodical complex. . - Kokshetau: KGU, 2017. - 101 p.<http://rmebrk.kz/>
6. Бородулина, О.В. Цитология и гистология – Cytology and histology : Практикум. / Костанайский гос. педагогический университет им. У. Султангазина. - Костанай: КГПУ им.У.Султангазина, 2020. - 100 с. - <http://rmebrk.kz/>

### **6. Control questions (feed back):**


- Morphofunctional characteristics of arteries.
- Sources of arterial development
- The structure of the membranes of the artery wall
- Morphofunctional characteristics of the vessels of the microcirculatory bed.
- Sources of development
- Arteriol-venular anastomoses
- Sources of heart development
- The structure of the membranes of the heart
- Features of the heart in childhood
- The structure of the vein wall – muscular and non -muscular type
- Age-related features
- Sources of heart development
- The structure of the membranes of the heart
- Features of the heart in childhood
- The structure of the vein wall – muscular and non -muscular type
- Age-related features

### **Lecture No. 2**

#### **1. Topic: Histological structure of the respiratory system.**

#### **2. Purpose:**

1. Understanding the anatomical organization of the respiratory system:

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- Analysis of the structure of the upper and lower respiratory tract, including the nasal cavity, larynx, trachea, bronchi and lungs.
- 2. Study of the main tissues and their functions in the respiratory system:
  - Analysis of epithelial, connective and muscular tissues, as well as their role in ensuring the functionality of the respiratory system.
- 3. Consideration of microscopic features of the respiratory tract:
  - Study of the structure of the mucous membrane, characteristic cells and their functions, as well as adaptations that ensure effective gas exchange.
- 4. Understanding the barrier functions of the respiratory system:
  - Familiarization with the clinical aspects of the histology of the respiratory system.

### 3. Lecture theses:


1. Introduction to the histology of the respiratory system:
  - General characteristics of the respiratory system and its functions.
  - The importance of studying histology for understanding the structure and functions of the respiratory organs.
2. The structure of the upper respiratory tract:
  - Features of the structure of the nasal cavity, including the mucous membrane, ciliary epithelium and multilayered squamous epithelium.
  - The histological structure of the larynx, including cartilage and muscle tissues, as well as the mucous membrane with their specific structure.
3. Structure of the lower respiratory tract:
  - Description of the histological structure of the trachea, bronchi and bronchioles, including the type of epithelium, the presence of cartilaginous rings, smooth muscles and glandular cells.
4. The structure of the lung tissue:
  - A detailed description of the structure of alveolar structures, including alveolar capillaries, type I and II pneumocytes, macrophages and basal cells.
  - The role of surfactant in maintaining the elasticity and function of the alveoli.
5. Vascularization and innervation of the respiratory system:
  - Consideration of the blood supply to the respiratory organs, including the pulmonary arteries and veins, as well as their branches in the lungs.
  - Description of the innervation of the respiratory system, including the autonomic and somatic nervous systems.
6. The role of migration and immune protection in the respiratory system:
  - Consideration of the role of macrophages, lymphocytes and other cells of the immune system in maintaining the protective functions of the respiratory organs.
  - Discussion of the role of leukocyte migration in the case of inflammatory processes and their effect on the histological structure of the respiratory system.
7. The clinical significance of knowledge of the histology of the respiratory system:
  - Discussion of the importance of understanding the histological features of the respiratory system for the diagnosis and treatment of various diseases, including asthma, bronchitis, pneumonia and lung tumors.

### 4. Illustrative material Presentation, including:

- color micrographs of histopreparations
- electronograms , diagrams, drawings

### 5. Literature:

#### Main literature

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#### **6. Control questions (feed back):**

- morphofunctional characteristics of the respiratory system
- Sources and course of development
- airways
- bronchial tree
- the structure of the acinus
- the structure of the alveoli
- the concept of surfactant