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## METHODOLOGICAL GUIDELINES FOR INDEPENDENT WORK OF STUDENTS

Discipline: "Normal cardiorespiratory system"


Discipline code: NCS 2207

Name and code of the EP: 6B10115 "Medicine"

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


Course and semester of study: 2/4


The amount of independent work: 3/17 hours

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Methodological guidelines for students' independent work have been developed in accordance with the working curriculum of the discipline (syllabus) "Normal cardiorespiratory system" and discussed at the 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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## Lesson No. 1

### 1. Topic: Morphofunctional features of the cardiac conduction system.

#### 2. Purpose:

- understand and describe the morphological and functional features of the cardiac conduction system, including its anatomy, structure and mechanisms of electrical signal transmission
- a deep understanding of the role of the conduction system in normal heart rhythm and conduction, as well as to understand the pathological changes that may occur in this system and their clinical manifestations. This knowledge is the basis for the successful diagnosis and treatment of cardiac arrhythmias and other diseases associated with impaired conduction in the heart.

#### 3.Tasks:

Complete the tasks in writing:

##### 1. Identification of the structures of the conducting system:

Draw the following structures of the conducting system: sinus node (sinoatrial node), atrioventricular node, His bundle and its branches (left and right legs of the His bundle).

Determine the structural features of each structure and their location in the heart.

##### 2. Assessment of the condition of sinus node cells:

- Determine the type of cells present in the sinus node and outline their morphological features.
- Describe the role of the sinus node in conducting impulses in the heart.

##### 3. Examination of the atrioventricular node:

- Draw the features of the structure of the cells of the atrioventricular node and their location between the atria and ventricles of the heart.
- Discuss the role of the atrioventricular node in the regulation of heart rhythm.

##### 4. Identification of the His bundle and its branches:

- Outline the features of the cell structure of the His bundle and its branches.
- Discuss the role of the His beam in conducting excitation from the atria to the ventricles of the heart.

##### 5. Comparative analysis of the conducting system in different species:


- Compare the morphological features of the conduction system of the heart in humans and other mammals (for example, mice or rats).
- Identify similarities and differences in the structure and functioning of the conducting system between species.

**4. The form of performance /assessment:** work in small groups, individual presentation protection, glossary compilation.

**5. Performance criteria:** checklist for SIW assessment

Checklist for SIW assessment

№	Evaluation criteria	Level			
		excellent	good	Satisfactory	Unsatisfactory
1	Answers the questions of the written assignment on the topic of the lesson	60	45	30	0
2	Prepares and defends the presentation of 3 histological micro-preparations	15	11,25	7,5	0
3	Prepares and defends the presentation of 3 electronic microphotographs	15	11,25	7,5	0
4	Performs a glossary on the subject of	10	7	5	0


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	SIW				
	Total:	<b>100</b>	<b>75</b>	<b>50</b>	<b>0</b>

#### Preparation and protection of the presentation of micropreparations and microphotographs

Form of control	Evaluation	Evaluation criteria
Preparation and protection of the presentation of 3 micro-preparations and 3 microphotographs.	Great Corresponds to the points: 95-100; 90-94	The presentation was made independently, at the appointed time, with a volume of at least 6 slides. At least 5 literary sources have been used. The slides are informative and concise. During the defense, the author demonstrates in-depth knowledge of the topic. Correctly sketches micropreparations and micrographs. Does not make mistakes when answering questions during the discussion.
	Well Corresponds to the points: 85-89; 80-84; 75-79, 70-74;	The presentation was made independently, at the appointed time, with a volume of at least 6 slides. At least 5 literary sources have been used. The slides are informative and concise. During the defense, the author demonstrates good knowledge of the topic. Correctly sketches micropreparations and micrographs. He makes unprincipled mistakes when answering questions that he corrects himself.
	Satisfactory Corresponds to the points: 65-69; 60-64;50-54	The presentation was made independently, at the appointed time, with a volume of at least 6 slides. At least 5 literary sources have been used. The slides are not meaningful. He makes mistakes when sketching micro-preparations and microphotographs. During the defense, the author makes fundamental mistakes when answering questions.
	Unsatisfactory Corresponds to the points 0-49	The presentation was not delivered on time, the volume is less than 6 slides. Less than 5 literary sources have been used. The slides are not meaningful. He cannot draw micro-preparations and micrographs. During the defense, the author makes gross mistakes when answering questions. He does not know his own material.

#### Compiling a glossary

Form of control	Evaluation	Evaluation criteria
Compiling a glossary	Great Corresponds to the points: 95-100; 90-94	The student compiled a glossary on the topic at the appointed time, independently, accurately, without errors, with a volume of at least 10 words, correctly formulated the concepts, the terms correspond to the topic.
	Well	The student compiled a glossary on the

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	Corresponds to the points: 85-89; 80-84; 75-79, 70-74;	topic at the appointed time, independently, carefully, with a volume of at least 10 words, correctly formulated the concepts, made unprincipled mistakes when compiling the glossary.
	Satisfactory Corresponds to the points: 65-69; 60-64;50-54	The student compiled a glossary on the topic at the appointed time, independently, but carelessly, with a volume of at least 10 words, made fundamental mistakes when compiling the glossary.
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**6. Deadline:** according to the schedule

## 7. 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
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) Перевод заглавия: Клеточная биология и гистология

### Additional literature


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### Electronic publications

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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/>

## 8. Control:

1. Features of the cardiac conduction system
2. Sinoatrial node.
3. Atrioventricular node.

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4. A bundle of Giss.
5. Purkinje cells.

## Lesson No. 2 Midterm control 1.

### 1.Topic: Bronchi and bronchioles.

#### 2. Purpose:

- Study of the histological structure of bronchi and bronchioles in order to understand their role in the functioning of the respiratory system and in the development of pathologies.

#### 3. Tasks:

- Sketch the structure of the walls of the bronchi and bronchioles, including the epithelium, musculature and mucous membrane.
- Analysis of the architecture of the bronchial tree and its relationship with neighboring structures of the respiratory system

**4. The form of performance /assessment:** work in small groups, individual presentation protection, glossary compilation.


**5. Performance criteria:** checklist for SIW assessment

Checklist for SIW assessment

№	Evaluation criteria	Level			
		excellent	good	Satisfactory	Unsatisfactory
1	Answers the questions of the written assignment on the topic of the lesson	60	45	30	0
2	Prepares and defends the presentation of 3 histological micro-preparations	15	11,25	7,5	0
3	Prepares and defends the presentation of 3 electronic microphotographs	15	11,25	7,5	0
4	Performs a glossary on the subject of SIW	10	7	5	0
	Total:	100	75	50	0

Preparation and protection of the presentation of micropreparations and microphotographs

Form of control	Evaluation	Evaluation criteria
Preparation and protection of the presentation of 3 micro-preparations and 3 microphotographs.	Great Corresponds to the points: 95-100; 90-94	The presentation was made independently, at the appointed time, with a volume of at least 6 slides. At least 5 literary sources have been used. The slides are informative and concise. During the defense, the author demonstrates in-depth knowledge of the topic. Correctly sketches micropreparations and micrographs. Does not make mistakes when answering questions during the discussion.
	Well Corresponds to the	The presentation was made independently, at the appointed time, with a volume of at least 6 slides.

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	points: 85-89; 80-84; 75-79, 70-74;	At least 5 literary sources have been used. The slides are informative and concise. During the defense, the author demonstrates good knowledge of the topic. Correctly sketches micropreparations and micrographs. He makes unprincipled mistakes when answering questions that he corrects himself.
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	Unsatisfactory Corresponds to the points 0-49	The presentation was not delivered on time, the volume is less than 6 slides. Less than 5 literary sources have been used. The slides are not meaningful. He cannot draw micro-preparations and micrographs. During the defense, the author makes gross mistakes when answering questions. He does not know his own material.

#### Compiling a glossary

Form of control	Evaluation	Evaluation criteria
Compiling a glossary	Great Corresponds to the points: 95-100; 90-94	The student compiled a glossary on the topic at the appointed time, independently, accurately, without errors, with a volume of at least 10 words, correctly formulated the concepts, the terms correspond to the topic.
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**6. Deadline:** according to the schedule

## **7. Literature:**

### **Main literature**

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5. Zhumabayeva, S.E., Boken, T.S. Cytology and histology : Educational-methodical complex. . - Kokshetau: KGU, 2017. - 101 p. <http://rmebrk.kz/>
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## **8. Control:**

1. Assessment of the role of bronchi and bronchioles in conducting air and ensuring gas exchange in the lungs.
2. Understanding the mechanisms of respiratory regulation and the bronchial tree's response to various stimuli.
3. Changes in the histology of bronchi and bronchioles in various diseases of the respiratory system, such as asthma, chronic bronchitis, etc.

## **Lesson No. 3**

### **1. Topic: Surfactant-alveolar complex.**


### **2. Purpose:**

- To get acquainted with the histological structure of the surfactant-alveolar complex, its functions and role in maintaining normal lung function.

### **3. Tasks:**

- 1 . To study the anatomical and functional structure of the alveolar components of the lungs, including alveolar cells, capillaries and surfactant.
2. To determine the main functions of the surfactant and its role in ensuring normal gas exchange in the lungs.



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3. To consider the pathological changes associated with surfactant deficiency and their effect on the function of the respiratory system.

4. To analyze the clinical significance of studying the histological structure of the surfactant-alveolar complex in the diagnosis and treatment of lung diseases.

**4. The form of performance /assessment:** work in small groups, individual presentation protection, glossary compilation.


**5. Performance criteria:** checklist for SIW assessment

Checklist for SIW assessment

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Preparation and protection of the presentation of micropreparations and microphotographs

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		makes fundamental mistakes when answering questions.
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### Compiling a glossary

Form of control	Evaluation	Evaluation criteria
Compiling a glossary	Great Corresponds to the points: 95-100; 90-94	The student compiled a glossary on the topic at the appointed time, independently, accurately, without errors, with a volume of at least 10 words, correctly formulated the concepts, the terms correspond to the topic.
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### 6. Deadline: according to the schedule

### 7. Literature:

#### Main literature

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#### Additional literature

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#### **8. Control Questions**

- 1.What is the surfactant-alveolar complex in the lungs?
2. What is the role of the surfactant in the alveolar complex?
3. Describe the structure and composition of the surfactant.
4. What functions does the surfactant perform in the alveolar space?
5. What is the mechanism of action of the surfactant on the surface tension in the alveoli?
6. Which cells synthesize and produce surfactant in the lungs?
7. What changes in the surfactant-alveolar complex can lead to pathological conditions?
8. What research methods allow us to study the surfactant-alveolar complex?
9. What pathologies can be associated with impaired synthesis or function of surfactant?
10. How can understanding the structure and function of the surfactant-alveolar complex be useful for therapists in the diagnosis and treatment of lung diseases?