

MINISTRY OF SCIENCE AND HIGHER EDUCATION
RUSSIAN FEDERATION
Federal State Autonomous Educational Institution of Higher Education
NORTH-CAUCASUS FEDERAL UNIVERSITY

METHODOLOGICAL RECOMMENDATIONS FOR PERFORMING
LABORATORY WORK IN THE DISCIPLINE
BIOLOGY: PARASITOLOGY

- Specialty: 31.05.01 General Medicine
- Mode of training: Full-time
- Year of commencement of studies: 2026
- Delivered in Semester 3

INTRODUCTION

The purpose of the guidelines

1. The purpose and objectives of the discipline (module)

The purpose of the discipline "Biology: Parasitology" is to form the appropriate set of professional and general cultural competencies of a future specialist in the field of 31.05.01 Medical Affairs.

The objectives of the discipline are:

- to ensure the assimilation of the basic theoretical principles of parasitology, including both classical approaches to the development of parasitology and the main current achievements of biological science;
- to form a responsible attitude towards the prevention of parasitic diseases based on knowledge about parasites;
- to develop creative abilities, including research skills, and to foster a need for independent knowledge acquisition

Requirements for the results of mastering the discipline "Biology: Parasitology"

As a result of studying the discipline, students should master the following competencies:

Code, competency statement	Code, indicator statement	Planned learning outcomes for the discipline (module), characterizing the stages of competency and indicator formation
OPC-5 Is able to assess morphofunctional, physiological conditions, and pathological processes in the human body in order to solve professional tasks	ID-1 OPC-5 Estimates morphofunctional physiological conditions and processes in the human body at the group and population levels to solve professional tasks ID-2 OPC-5 Identifies pathological conditions and processes in the human body of professional tasks	Proficiency in parasitological examination methods and techniques for compiling parasitological descriptions, and the ability to use this knowledge to solve theoretical and practical problems in modern parasitology

STRUCTURE AND CONTENT OF LABORATORY CLASSES

Laboratory work no.1. Introduction. Parasitic sarcomastigophores

The aim of the work is to study the morphophysiological features of parasitic sarcomastigophores. Be able to identify representatives of the Sarcomastigophore type (Sarcomastigophorae) on micro-preparations and justify methods for the diagnosis and prevention of diseases caused by them.

The order of the work

At the beginning of the lesson, an introduction to the topic. General characteristics of the kingdom of Protista.

While completing the first work, students get acquainted with the device for working on microscopes using immersion oil.

Microscopy of parasitic protozoa is a key role in the identification of the parasite.

Students microscopize ready-made preparations: representatives of the Sarcomastigophora type, Sarcodina subtype (Sarcodes): *Entamoeba histolytica* (dysentery amoeba), *Entamoeba gingivalis* (Oral amoeba), *Dientamoeba fragilis* (Dientamoeba), genus *Acanthamoeba* (*Acanthamoeba*) and *Naegleria fowleri* (*Naegleria* Fowler). Representatives of the Sarcomastigophora type, Mastigophora subtype: *Trypanosoma* spp., *Leishmania* spp., *Trichomonas vaginalis* (urogenital trichomonas), *Giardia lamblia* (*giardia*).

When microscoping, it should be borne in mind that the microscope, especially at high magnifications, does not capture the entire depth of the object, therefore, when the tube is gradually lowered using a micro screw, the object is visible first from above, and then from the optical section.

Visual aids (tables and morphophysiological drawings), permanent preparations of parasitic animals and details of their structure are used during the laboratory lesson. Classes should be provided with microscopes, fixed biological materials and ready-made preparations, and demonstration tables.

Enter the results in a laboratory notebook. Make a drawing and notation.

Report content

1. The Latin name of the parasite.
2. Morphology of protozoa (introduction of albums with drawings of parasites, giving the designation of morphological features).
3. To substantiate the methods of diagnosis and prevention of diseases caused by them.
4. Solving situational problems on the topic "Parasitic sarcomastigophores"

Control questions

1. Name the parasitic representatives of the Sarcomastigophora Type.
2. Distinctive characteristics of the Sarcopodic and Stinging subtypes.
3. Types of trichomonads that parasitize humans, their morphological differences.
4. Which of the flagellates has an undulating membrane?
5. What biological material can be used to detect giardia, trichomonads?
6. Name the methods of human infection with parasitic flagella.

The list of basic literature:

1. Parasitology: textbook / T. V. Viktorova, S. M. Izmailova, G. F. Koritina [et al.]; edited by T. V. Viktorova. – Ufa: Bashkir State Medical University, 2020. – 146 p.
2. Abdukaeva N. S. Special questions of parasitology / N. S. Abdukaeva. – St. Petersburg: St. Petersburg State Pediatric Medical University, 2018. – 48 p.

List of additional literature:

1. Atlas of infectious diseases [Electronic resource] / Edited by V. I. Besteva, S. N. Zharova, V. V. Nikiforova – M. : GEOTAR-Media, 2014. <http://www.studmedlib.ru/book/ISBN9785970428771.html>
2. Infectious diseases. Atlas [Electronic resource] : a guide / Uchaykin V.F., Kharlamova F.S., Shamsheva O.V., Polesco I.V. – Moscow : GEOTAR-Media, 2010. <http://www.studmedlib.ru/book/ISBN9785970418109.html>
3. Infectious diseases [Electronic resource] : textbook / Alikeeva G. K. et al.; Edited by N. D. Yushchuk, Yu. Ya. Vengerov. – 2nd ed., reprint. And additional – M. : GEOTAR-Media, 2013. <http://www.studmedlib.ru/book/ISBN9785970426715.htm>

Laboratory work No. 2

Apicomplexes

The purpose of the work is to study the morphophysiological features of sporophores. Be able to identify representatives of the Apicomplexa type on micro-preparations and substantiate methods for the diagnosis and prevention of diseases caused by them.

The order of the work

Students microscopize ready-made preparations: representatives of the Apicomplexa type: malarial plasmodium of the genus *Plasmodium*. *Toxoplasma gondii*, *Isospora belli*, and *Sarcocystis* sp.

Visual aids (tables and morphophysiological drawings), permanent preparations of parasitic animals and details of their structure are used during the laboratory lesson. Classes should be provided with microscopes, fixed biological materials and ready-made preparations, and demonstration tables.

Enter the results in a laboratory notebook. Make a drawing and notation.

Report content

5. The Latin name of the parasite.
6. Morphology of protozoa (introduction of albums with drawings of parasites, giving the designation of morphological features).
7. To substantiate the methods of diagnosis and prevention of diseases caused by them.

8. Solving situational problems on the topic of "Apicomplexes"

Control questions

1. What are apicomplexes and what are the main characteristics of their cells?
2. Name the main classes and types of apicomplexes, and give examples of the diseases they cause.
3. What is the role of the apical complex in the life cycle of apicomplexes?
4. Describe the life cycle of one of the representatives of apicomplexes, for example, Plasmodium (the causative agent of malaria).
5. How did apicomplexes adapt to a parasitic lifestyle?
6. What are the mechanisms of transmission of infections caused by apicomplexes?
7. What methods are used to diagnose infections caused by apicomplexes?
8. Discuss methods of treating infections caused by apicomplexes and their effectiveness.
9. What are the ecological roles of apicomplexes in their natural habitat?
10. How does modern research in the field of genetics and molecular biology help in the fight against diseases caused by apicomplexes?

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2. Abdukaeva N. S. Special questions of parasitology / N. S. Abdukaeva. – St. Petersburg: St. Petersburg State Pediatric Medical University, 2018. – 48 p.

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1. Atlas of infectious diseases [Electronic resource] / Edited by V. I. Besteva, S. N. Zharova, V. V. Nikiforova – M. : GEOTAR-Media, 2014. <http://www.studmedlib.ru/book/ISBN9785970428771.html>
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3. Infectious diseases [Electronic resource] : textbook / Alikeeva G. K. et al.; Edited by N. D. Yushchuk, Yu. Ya. Vengerov. – 2nd ed., reprint. And additional – M. : GEOTAR-Media, 2013. <http://www.studmedlib.ru/book/ISBN9785970426715.htm>

Laboratory work No. 3

Flukes

The purpose of the work is to study the morphophysiological features of flatworms. Be able to identify representatives of the Trematoda class on micro-preparations and substantiate methods for the diagnosis and prevention of diseases caused by them.

The order of the work

Students microscopize ready-made preparations: representatives of the Trematoda class - *Fasciola hepatica* (liver fluke) and *Fasciolopsis buski*; *Opisthorchis felinus* (feline fluke), *Clonorchis sinensis* (Chinese fluke), *Dicrocoelium lanceatum* (lanceolate fluke), *Paragonimus westermani* (pulmonary fluke), *Schistosoma* spp.

Visual aids (tables and morphophysiological drawings), permanent preparations of parasitic animals and details of their structure are used during the laboratory lesson. Classes should be provided with microscopes, fixed biological materials and ready-made preparations, and demonstration tables.

Enter the results in a laboratory notebook. Make a drawing and notation.

Report content

1. The Latin name of the parasite.
2. Morphology of helminths (introduction of albums with drawings of parasites, giving the designation of morphological features).
3. To substantiate the methods of diagnosis and prevention of diseases caused by them.
4. Solving situational problems on the topic of "Trematodes"

Control questions

1. What are trematodes and what are the main characteristics of their morphology?
2. What is the general body structure of trematodes and how is it adapted to a parasitic lifestyle?
3. Describe the life cycle of trematodes. What stages does it include and which organisms act as hosts?
4. Name the main types of trematodes and the diseases they cause in humans and animals (for example, *Schistosoma*, *Fasciola*).
5. What are the mechanisms of infection with flukes and the ways of transmission of infections?
6. What are the symptoms and pathogenesis of diseases caused by flukes? 7. What methods are used to diagnose infections caused by flukes?
8. Discuss treatments for fluke infections and their effectiveness.
9. What is the role of trematodes in ecosystems and their interaction with other organisms?
10. How does modern research in the field of molecular biology and genetics help in the fight against diseases caused by flukes?

The list of basic literature:

1. Parasitology: textbook / T. V. Viktorova, S. M. Izmailova, G. F. Koritina [et al.]; edited by T. V. Viktorova. – Ufa: Bashkir State Medical University, 2020. – 146 p.
2. Abdukaeva N. S. Special questions of parasitology / N. S. Abdukaeva. – St. Petersburg: St. Petersburg State Pediatric Medical University, 2018. – 48 p.

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2. Infectious diseases. Atlas [Electronic resource] : a guide / Uchaykin V.F., Kharlamova F.S., Shamsheva O.V., Polesco I.V. – Moscow : GEOTAR-Media, 2010. <http://www.studmedlib.ru/book/ISBN9785970418109.html>
3. Infectious diseases [Electronic resource] : textbook / Alikeeva G. K. et al.; Edited by N. D. Yushchuk, Yu. Ya. Vengerov. – 2nd ed., reprint. And additional – M. : GEOTAR-Media, 2013. <http://www.studmedlib.ru/book/ISBN9785970426715.htm>

Laboratory work No. 4

Cestodes

The purpose of the work is to study the morphophysiological features of tapeworms. Be able to identify representatives of the Cestodes class (Cestoidea) on micro-preparations and justify methods for the diagnosis and prevention of diseases caused by them.

The order of the work

Students microscopize ready-made preparations: representatives of the type representatives of the Cestoda class: *Diphyllobothrium latum*, *Taeniarhynchus saginatus*, *Taenia solium*, *Echinococcus granulosus*, *Vampirolepis nana*.

Visual aids (tables and morphophysiological drawings), permanent preparations of parasitic animals and details of their structure are used during the laboratory lesson. Classes should be provided with microscopes, fixed biological materials and ready-made preparations, and demonstration tables.

Enter the results in a laboratory notebook. Make a drawing and notation.

Report content

1. The Latin name of the parasite.
2. Morphology of helminths (introduction of albums with drawings of parasites, giving the designation of morphological features).
3. To substantiate the methods of diagnosis and prevention of diseases caused by them.
4. Solving situational problems on the topic of "Tapeworms"

Control questions 1. What are tapeworms and what are the main characteristics of their morphology? 2. Describe the anatomical structure of the body of tapeworms. What are the functions of the various parts such as the scolex, neck, and proglottides? 3. What is the life cycle of tapeworms? What stages does it include and which organisms act as hosts? 4. Name the main types of tapeworms and the diseases they cause in humans and animals (for example, *Taenia*

saginata, Taenia solium, Echinococcus). 5. What are the mechanisms of infection with tapeworms and the ways of transmission of infections? 6. What are the symptoms and pathogenesis of diseases caused by tapeworms? 7. What methods are used to diagnose infections caused by tapeworms? 8. Discuss treatments for tapeworm infections and their effectiveness.

The list of basic literature:

1. Parasitology: textbook / T. V. Viktorova, S. M. Izmailova, G. F. Koritina [et al.]; edited by T. V. Viktorova. – Ufa: Bashkir State Medical University, 2020. – 146 p.
2. Abdukaeva N. S. Special questions of parasitology / N. S. Abdukaeva. – St. Petersburg: St. Petersburg State Pediatric Medical University, 2018. – 48 p.

List of additional literature:

1. Atlas of infectious diseases [Electronic resource] / Edited by V. I. Besteva, S. N. Zharova, V. V. Nikiforova – M. : GEOTAR-Media, 2014. <http://www.studmedlib.ru/book/ISBN9785970428771.html>
2. Infectious diseases. Atlas [Electronic resource] : a guide / Uchaykin V.F., Kharlamova F.S., Shamsheva O.V., Polesco I.V. – Moscow : GEOTAR-Media, 2010. <http://www.studmedlib.ru/book/ISBN9785970418109.html>
3. Infectious diseases [Electronic resource] : textbook / Alikeeva G. K. et al.; Edited by N. D. Yushchuk, Yu. Ya. Vengerov. – 2nd ed., reprint. And additional – M. : GEOTAR-Media, 2013. <http://www.studmedlib.ru/book/ISBN9785970426715.htm>

Laboratory work No. 5.

Parasitic nematodes

The aim of the work is to be able to identify the pathogens of the most common human nematodes (trichinosis, dracunculosis and filariasis) and use knowledge of life cycles in the diagnosis and prevention of diseases.

The order of the work

Students microscopize ready-made preparations: representatives of the Nemathelminthes type (geohelminths): Trichuris trichiura (whipworm), Enterobius vermicularis (baby pinworm), Ascaris lumbricoides (roundworm). Representatives of the Nemathelminthes type (geohelminths that develop with migration): Strongyloides stercoralis, Toxocara canis, Necator americanus, and Ancylostoma duodenale. Representatives of the Nemathelminthes type (biohelminths): Trichinella spiralis, Dracunculus medinensis, Wuchereria bancrofti, Brugia malayi, Onchocerca volvulus, Loa loa, Dirofilaria immitis.

The study of the morphology of Enterobius vermicularis (baby pinworm), Ascaris lumbricoides (roundworm) on macro

preparations should be recorded in a laboratory notebook. Make a drawing and notation.

Report content

1. The Latin name of the parasite.

2. Morphology of helminths (introduction of albums with drawings of parasites, giving the designation of morphological features).

3. To substantiate the methods of diagnosis and prevention of diseases caused by them.

4. Solving situational problems on the topic "Parasitic roundworms"

Control questions

1. What are roundworms and what are the main characteristics of their morphology?

2. Describe the anatomical structure of the body of roundworms. What are the functions of various parts such as the body, muscles, and genitals?

3. What is the life cycle of parasitic roundworms? What stages does it include and which organisms act as hosts?

4. What are the main types of parasitic roundworms and the diseases they cause in humans?

5. What are the mechanisms of infection by parasitic roundworms and the ways of transmission of infections?

6. What are the symptoms and pathogenesis of diseases caused by parasitic roundworms?

7. What methods are used to diagnose infections caused by parasitic roundworms?

8. Discuss treatments for infections caused by parasitic roundworms and their effectiveness.

9. What is the role of parasitic roundworms in ecosystems and their interaction with other organisms?

10. What modern approaches are used to study the biology and genetics of parasitic roundworms, and how can they help in the fight against infections?

The list of basic literature:

1. Parasitology: textbook / T. V. Viktorova, S. M. Izmailova, G. F. Koritina [et al.]; edited by T. V. Viktorova. – Ufa: Bashkir State Medical University, 2020. – 146 p.

2. Abdukaeva N. S. Special questions of parasitology / N. S. Abdukaeva. – St. Petersburg: St. Petersburg State Pediatric Medical University, 2018. – 48 p.

List of additional literature:

1. Atlas of infectious diseases [Electronic resource] / Edited by V. I. Besteva, S. N. Zharova, V. V. Nikiforova – M. : GEOTAR-Media, 2014. <http://www.studmedlib.ru/book/ISBN9785970428771.html>

2. Infectious diseases. Atlas [Electronic resource] : a guide / Uchaykin V.F., Kharlamova F.S., Shamsheva O.V., Polesco I.V. – Moscow : GEOTAR-Media, 2010. <http://www.studmedlib.ru/book/ISBN9785970418109.html>

3. Infectious diseases [Electronic resource] : textbook / Alikeeva G. K. et al.; Edited by N. D. Yushchuk, Yu. Ya. Vengerov. – 2nd ed., reprint. And additional – M. : GEOTAR-Media, 2013. <http://www.studmedlib.ru/book/ISBN9785970426715.htm>

Laboratory work No. 6

Parasitic insects with incomplete transformation

Objective: To study the morphological features of the structure and the role of ectoparasitic insects with incomplete transformation in the spread of human parasitic diseases and to justify measures to combat them and anti-epidemic measures. To use knowledge of life cycles in the diagnosis and prevention of diseases.

The order of the work

Introduction to the topic. General characteristics of parasitic insects with incomplete transformation.

Study of samples of parasitic insects of the order Anoplura (lice), the order Heteroptera (bedbugs) and the order Siphonaptera (fleas). Using a magnifying glass, stereomicroscope and microscope.

Enter the results in a laboratory notebook. Make a drawing and notation.

Discussion of insect development cycles, host invasion, anti-epidemic measures and diagnosis of tolerated diseases.

Report content

1. The Latin name of a transmissible insect.
2. Morphology of parasitic insects with incomplete transformation (introduction of albums with drawings of insects, giving the designation of morphological features).
3. To substantiate the methods of diagnosis and prevention of diseases they carry.
4. Solving situational problems on the topic of "Parasitic insects with incomplete transformation"

Control questions:

1. What is incomplete transformation? How is it different from a complete transformation? Name the main stages of development of insects with incomplete transformation.
2. What are some examples of parasitic insects that develop with incomplete transformation?
3. What morphological features are characteristic of insects with incomplete transformation? What is the structure of the oral apparatus in parasitic insects and how is it related to their lifestyle?
4. Life cycle. Describe the life cycle of an insect with incomplete transformation using the example of, for example, lice or fleas. How does the interaction between the parasite and the host occur during the life cycle?

5. What role do parasitic insects play in ecosystems? What diseases can be caused by parasitic insects?
6. What methods are used to collect and identify parasitic insects? What are the main difficulties associated with studying these organisms?
7. What adaptations have parasitic insects developed to survive in their host? How can parasites change the behavior of their hosts?
8. How can parasitic insects affect human and animal health? What preventive measures can be taken to control parasites?

The list of basic literature:

1. Parasitology: textbook / T. V. Viktorova, S. M. Izmailova, G. F. Koritina [et al.]; edited by T. V. Viktorova. – Ufa: Bashkir State Medical University, 2020. – 146 p.
2. Abdukaeva N. S. Special questions of parasitology / N. S. Abdukaeva. – St. Petersburg: St. Petersburg State Pediatric Medical University, 2018. – 48 p.

List of additional literature:

1. Atlas of infectious diseases [Electronic resource] / Edited by V. I. Besteva, S. N. Zharova, V. V. Nikiforova – M. : GEOTAR-Media, 2014. <http://www.studmedlib.ru/book/ISBN9785970428771.html>
2. Infectious diseases. Atlas [Electronic resource] : a guide / Uchaykin V.F., Kharlamova F.S., Shamsheva O.V., Polesco I.V. – Moscow : GEOTAR-Media, 2010. <http://www.studmedlib.ru/book/ISBN9785970418109.html>
3. Infectious diseases [Electronic resource] : textbook / Alikeeva G. K. et al.; Edited by N. D. Yushchuk, Yu. Ya. Vengerov. – 2nd ed., reprint. And additional – M. : GEOTAR-Media, 2013. <http://www.studmedlib.ru/book/ISBN9785970426715.htm>

Laboratory work No. 7

Parasitic insects with complete transformation

Objective: To study the morphological features of the structure and the role of ectoparasitic insects with complete transformation in the spread of human parasitic diseases and to justify measures to combat them and anti-epidemic measures. To use knowledge of life cycles in the diagnosis and prevention of diseases.

The order of the work

Introduction to the topic. General characteristics of parasitic insects with complete transformation.

Study of samples of blood-sucking insects of the order Diptera (Diptera): family. Culicidae (mosquitoes), family. Ceratopogonidae (woodlice), family. Simuliidae (midges), family. Tabanidae (horseflies). Using a magnifying glass, stereomicroscope and microscope.

Enter the results in a laboratory notebook. Make a drawing and notation.

Discussion of insect development cycles, host invasion, anti-epidemic measures and diagnosis of tolerated diseases.

Report content

1. The Latin name of a transmissible insect.
2. Morphology of parasitic insects with complete transformation (introduction of albums with drawings of insects, giving the designation of morphological features).
3. To substantiate the methods of diagnosis and prevention of diseases they carry.
4. Solving situational problems on the topic of "Parasitic insects with complete transformation"

Control questions:

1. What is a complete transformation? How does it differ from incomplete transformation? Name the main stages of insect development with complete transformation.
2. Give examples of parasitic insects that develop with complete transformation. 3. What morphological changes occur during the process of complete transformation? What is the structure of the oral apparatus in insects with complete transformation at different stages of their life?
4. Describe the life cycle of an insect with complete transformation using the example of, for example, a butterfly or beetle. What are the main stages of development from egg to adult?
5. What role do insects play with complete transformation in ecosystems? What positive and negative effects can these insects have on the environment?
6. What methods are used to study insects with complete transformation? What are the main difficulties associated with their observation and research?
7. What adaptations have insects developed with complete transformation to survive in different habitats? How can climate change affect the life cycles of insects with complete transformation?
8. How can some insects with complete transformation affect human and animal health? What control and control measures can be used against pests that have a full development cycle?

The list of basic literature:

1. Parasitology: textbook / T. V. Viktorova, S. M. Izmailova, G. F. Koritina [et al.]; edited by T. V. Viktorova. – Ufa: Bashkir State Medical University, 2020. – 146 p.
2. Abdukaeva N. S. Special questions of parasitology / N. S. Abdukaeva. – St. Petersburg: St. Petersburg State Pediatric Medical University, 2018. – 48 p.

List of additional literature:

1. Atlas of infectious diseases [Electronic resource] / Edited by V. I. Besteva, S. N. Zharova, V. V. Nikiforova – M. : GEOTAR-Media, 2014. <http://www.studmedlib.ru/book/ISBN9785970428771.html>
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3. Infectious diseases [Electronic resource] : textbook / Alikeeva G. K. et al.; Edited by N. D. Yushchuk, Yu. Ya. Vengerov. – 2nd ed., reprint. And additional – M. : GEOTAR-Media, 2013. <http://www.studmedlib.ru/book/ISBN9785970426715.htm>

Laboratory work No. 8

Acariform mites

Objective: To study the morphological features of the structure and the role of acariform mites in the spread of human parasitic diseases and to justify measures to combat them and anti-epidemic measures. To use knowledge of the life cycles and localization of the parasite in the diagnosis and prevention of diseases.

List of knowledge and practical skills

1. To know representatives of acariform mites of medical importance.
2. To study the morphological characteristics of scabies itch and be able to identify this representative of acariform mites.
3. Know the life cycle of scabies mites.
4. With a pronounced clinical picture, be able to diagnose itchy scabies.
5. Know preventive measures to control scabies mites

The order of the work

Introduction to the topic. General characteristics of acariform mites.

The study of micro-preparations: *Sarcoptes scabiei* (scabies itch), *Demodex folliculorum* (acne gland).

Enter the results in a laboratory notebook. Arrange the drawing and designations in an album.

Discussion of the localization of the parasite in the host body, anti-epidemic measures and methods of disease diagnosis.

Report structure

1. Latin name.
2. Morphology of the parasite (introduction of albums with drawings of insects, giving the designation of morphological features).

3. To substantiate the methods of diagnosis and prevention of diseases caused by them.
4. Solving situational problems on the topic of "Acariform ticks"

Control questions:

1. General characteristics of acariform mites, name the representatives of medical importance.
2. Name the morphological characteristics of scabies itch and acne.
3. Describe the life cycle of scabies itch and the ways of infection.
4. Describe the life cycle of acne and the ways of infection.
5. Describe the clinical manifestations and diagnostic methods for itchy scabies.
6. Describe the clinical manifestations and diagnostic methods for demodicosis.
7. What preventive measures to control acariform mites do you know?

The list of basic literature:

1. Parasitology: textbook / T. V. Viktorova, S. M. Izmailova, G. F. Koritina [et al.]; edited by T. V. Viktorova. – Ufa: Bashkir State Medical University, 2020. – 146 p.
2. Abdukaeva N. S. Special questions of parasitology / N. S. Abdukaeva. – St. Petersburg: St. Petersburg State Pediatric Medical University, 2018. – 48 p.

List of additional literature:

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Laboratory work 9

Parasitiform mites

Objectives of the work: To study the morphological features of the structure and the role of parasitiform mites in the spread of human parasitic diseases and to justify measures to combat them and anti-epidemic measures. To use knowledge of life cycles in the diagnosis and prevention of diseases.

List of knowledge and practical skills

1. Be able to distinguish between the main groups and types of ticks of medical importance.
2. To know the morphological features of representatives of parasitiform mites of medical importance.
3. Be able to recognize the clinical manifestations of diseases associated with the bites of parasitiform ticks.
4. Know the diseases and pathogens carried by parasitiform mites.
5. Know the methods of prevention and control of parasitiform mites

The order of the work

Introduction to the topic. General characteristics of parasitiform mites.

The study of micro-preparations: the Ixodidae family of ixodes mites, Argasidae mites, Gamasina mites.

Enter the results in a laboratory notebook. Arrange drawings and designations in an album.

Discussion of vector-borne diseases, anti-epidemic measures and methods of disease diagnosis.

Report structure

1. Latin name.
2. Morphology of the parasite (introduction of albums with drawings of insects, giving the designation of morphological features).
3. To substantiate the methods of diagnosis and prevention of diseases caused by them.
4. Solving situational problems on the topic "Parasitiform mites"

Control questions:

1. Name the representatives of parasitiform ticks of medical importance.
2. Name the morphological features of representatives of parasitiform mites of medical importance.
3. Describe the clinical manifestations of diseases caused by parasitiform mites.
4. Name the pathogens and diseases carried by parasitiform mites.
5. Name the methods of prevention and control of parasitiform mites.

The list of basic literature:

1. Parasitology: textbook / T. V. Viktorova, S. M. Izmailova, G. F. Koritina [et al.]; edited by T. V. Viktorova. – Ufa: Bashkir State Medical University, 2020. – 146 p.
2. Abdukaeva N. S. Special questions of parasitology / N. S. Abdukaeva. – St. Petersburg: St. Petersburg State Pediatric Medical University, 2018. – 48 p.

List of additional literature:

1. Atlas of infectious diseases [Electronic resource] / Edited by V. I. Besteva, S. N. Zharova, V. V. Nikiforova – M. : GEOTAR-Media, 2014. <http://www.studmedlib.ru/book/ISBN9785970428771.html>
2. Infectious diseases. Atlas [Electronic resource] : a guide / Uchaykin V.F., Kharlamova F.S., Shamsheva O.V., Polesco I.V. – Moscow : GEOTAR-Media, 2010.
<http://www.studmedlib.ru/book/ISBN9785970418109.html>
3. Infectious diseases [Electronic resource] : textbook / Alikeeva G. K. et al.; Edited by N. D. Yushchuk, Yu. Ya. Vengerov. – 2nd ed., reprint. And additional – M. : GEOTAR-Media, 2013.
<http://www.studmedlib.ru/book/ISBN9785970426715.html>

EXAM SURVEYS

Exam questions (3rd semester)

1. The concepts of parasitism and parasite. The spread of parasitism in the animal kingdom.
2. Correlation of parasitism and related phenomena.
3. Obligate and facultative parasitism.
4. Temporary and permanent parasitism.
5. The origin of parasitism.
6. Ways of parasite penetration into the host's body.
7. Endoparasites: cellular, tissue and cavity parasitism.
8. Ectoparasites.
9. Structure and life cycle of trypanosomes. African and American trypanosomiasis. The main reservoirs and carriers of sleeping sickness and Chagas disease.
10. The structure and life cycle of Leishmania.
11. Cutaneous leishmaniasis, the main natural reservoirs and vectors.
12. Visceral leishmaniasis, the main natural reservoirs and vectors.
13. The structure and features of parasitization of giardia, trichomonads and opaline.
14. The amoeba squad. Parasitic amoebas, their life cycle and ways of infection. Dysentery amoeba.
15. The structure, distribution and development cycle of gregarin.
16. The cycle of development of aimeria (coccidia) and the method of infecting animals with them.

Aimeriosis (coccidiosis) of rabbits.

17. Toxoplasmosis. Sarcosporidiosis.

18. Malarial plasmodium. Stages of development in the human liver.

Erythrocyte stages.

19. Stages of development of malarial plasmodium in the mosquito body.

20. Malaria vectors. The spread of malaria. Control of malaria and its vectors.

21. Pyroplasm. Features of structure and reproduction. The transmissible pathway of infection of mammals by pyroplasmas. Pyroplasmosis.

22. Features of the organization and life cycle of microsporidia and mixosporidia.

23. Parasitic infusoria. Balantidia and human balantidiosis.

24. Reproduction and development of flukes (flukes).

25. The concept of intermediate and final hosts.

26. The general concept of helminthiasis and the biological basis of their prevention.

27. Liver fluke, cat fluke. Life cycles, pathways of invasion of hosts, diseases caused.

28. Schistosomes, lanceolate fluke. Life cycles, pathways of invasion of hosts, diseases caused.

29. Characteristic features of the monogenean structure associated with a parasitic lifestyle.

30. Frog's polyglot, paradoxical lichen. Life cycles, ways of infection of hosts.

31. Morphological and biological features of tapeworms, related to parasitization in the intestines of vertebrates.

32. Broad ribbon, unarmed chain, armed chain
Life cycles, ways of infection of hosts.

33. Echinococcus. Life cycle, ways of infection of hosts.

34. Ecology and pathogenic significance of nematodes. The concept of geohelminths and biohelminths.

35. Features of the organization and life cycle of human roundworms and baby pinworms.

36. Features of the organization and life cycle of trichinella, hairworms and scrapers.

37. The concept of the life pattern and annual cycle of blood-sucking arthropods; types of parasitism.
38. Parasitic insects from the orders of down-eaters, lice, and bedbugs.
39. Parasitic insects from the order Diptera. They have long moustaches.
40. Parasitic insects from the order Diptera. Short moustache.
41. General characteristics of fleas.
42. The medical significance of fleas.
43. Sarcoptiform mites: hair, skin, scabies, scabies.
44. Gamase mites and their medical significance.
45. Ixodes ticks and their medical significance.
46. Argasse mites and their medical significance.
47. Thrombidiform mites and their medical significance.
48. Development and current state of the doctrine of natural foci diseases. Specific features of natural focal infections.
49. Major and minor carriers and vectors of diseases.
50. Natural foci of human diseases on the territory of the Russian Federation Federation.

MINISTRY OF SCIENCE AND HIGHER EDUCATION
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METHODOLOGICAL RECOMMENDATIONS FOR THE IMPLEMENTATION OF
INDEPENDENT WORK IN THE DISCIPLINE
BIOLOGY: PARASITOLOGY

Stavropol, 2026

Methodological guidelines for students on writing an essay

The abstract is prepared by the student in A semester in accordance with the methodological recommendations of the department during the hours of independent work and submitted to the teacher on time. The results of the review of the abstract are announced by the teacher at one of the scheduled classes.

The purpose of preparing an abstract is to develop students' thinking (the ability to think, reason, analyze, compare, generalize, draw conclusions and logical conclusions), and to develop skills in preparing scientific or other special written texts on a given topic.

The work on the abstract begins with the selection of the research topic. The student is given the right to independently choose the topic of the abstract from the list of topics recommended by the teacher.

The preparation of the abstract should be carried out in accordance with the plan, the text should have an organic internal unity, strict logic of presentation, semantic completeness. The main requirements for the content of the abstract are that the material used in the abstract should strictly relate to the chosen topic.; - it is necessary to present the main aspects of the problem not only competently, but also in accordance with one or another logic (chronological, thematic, event, etc.);

- when presenting, the ideas of different authors should be grouped according to common points of view.;
- the abstract should end with conclusions based on the research work carried out;
- the abstract is written in compliance with the norms and rules of the Russian language.

General requirements for the design of the abstract

1) The total amount of work.

In terms of the total amount of work, it is recommended to focus on 15-20 pages.

2) The format of the design.

The text of the abstract should be easy to read. It is printed on one side of a standard sheet of white single-grade A4 paper. When printing, it is necessary to use one and a half line spacing, Times New Roman Cyr font (14 points) and leave margins: left – 30 mm, right – 15 mm, top – 20 mm, bottom – 20 mm. Footnotes and footnotes are recommended to be printed in the same font type, but smaller (10 points), with the same line spacing. The headings of the structural parts of the work should be designed according to the rules of the text heading, the headings to the illustrative material – according to the requirements for the design of the illustrative material. The rest of the text should be aligned in width. Each page of the text should contain approximately 1800 characters (30 lines of 60 characters per line, counting each punctuation mark and the space between words as a printed mark).

3) Page numbering.

The pages should be numbered in Arabic numerals. The numbering of the pages of the work begins with the title page, while end-to-end numbering is observed throughout the text, including appendices. The page number is not indicated on the title page. The pages should be numbered at the bottom of the sheet in the center or in the lower right corner.