

**MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE**  
**STATE BIOTECHNOLOGICAL UNIVERSITY**  
**Faculty of Veterinary Medicine**  
**PHARMACOLOGY AND PARASITOLOGY DEPARTMENT**



**WORKBOOK**  
**for laboratory classes of educational discipline «Veterinary Parasitology»**  
**for student \_\_\_ group \_\_\_\_\_ year**  
second master's level in speciality 211 – Veterinary medicine  
**Part II**

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(Surname and Name)

**Lecturer: PhD.**

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Surname

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Name, patronymic

Kharkiv – 2022

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**Authors: Nikiforova O.V., Prykhodko Yu.O., Mazanny O.V., Fedorova O.V.**

**Edited by associate professor of Pharmacology and Parasitology department Nikiforova O.V.**

**Reviewer: associate professor of department of epizootology and microbiology, Candidate of Veterinary Sciences Savenko M.M.**

**Workbook for laboratory classes of educational discipline «Veterinary Parasitology» for students of IV-V years of second master's level in speciality 211 – Veterinary medicine. / O.V. Nikiforova, Yu.O. Prykhodko, O.V. Mazanny, O.V. Fedorova. Kh., 2022. Part II. 46 p.**

**Basic foundation of Veterinary and Cestodology and Nematodology have been stated. The data on the morphology and biology of agents of invasive disease of ruminants, horses, pigs, carnivorous, rabbits, birds and bees have mentioned.**

**For training at higher educational institutions III-IV accreditation level on the specialty 211 – «Veterinary medicine».**

**First edition.**

**Translated and layout created by O.V. Nikiforova, cand. of vet. sci., associate professor of Pharmacology and Parasitology department of SBTU**

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### RECOMMENDED BOOKS

1. Timothy M. Goater, Cameron P. Goater, Gerald W. Esch. Parasitism. The diversity and ecology of animal parasites. Second edition, Cambridge, University Press, 2001, 2014, 524 p.
2. Gregory v. Lamann. Veterinary parasitology. Nova biomedical Press, Inc. New York, 2010, 323 p.
3. G.M.Urquhart, J.Armour, J.L.Duncan at all. Veterinary parasitology. The faculty of veterinary medicine, the University of Glasgow, Scotland, 2nd edition 1996, 307 p.
4. Dwight D. Bowman Charles M. Hendrix David S. Lindsay Stephen C. Barr. Feline Clinical Parasitology. Iowa State University Press. 2002. 469 c.

### METHODOLOGY OF DISCIPLINE «VETERINARY PARASITOLOGY»

Preparing for each class, the student should know:

1. Definition of each disease.
2. Place of infectious agents in the animal classification.
3. Morphological and biological peculiarities of pathogens and characteristics of their eggs or larvae. To know how they are different from other parasites.
4. Complex life diagnostics (features of epizootology, pathogenesis, clinical signs, special (laboratory) diagnostics), differential diagnosis.
5. Post-mortem diagnostics of invasions, taking into account the site and type of zooparasites, the intensity of invasion and the nature of the pathoanatomical changes.
6. Measures to control invasions: a). medicines and schemes of their use; b). features and main ways of prevention.

### REQUIREMENTS OF PHARMACOLOGY AND PARASITOTOLOGY DEPARTMENT TO STUDENTS

1. Have and wear clean overalls – white gown and hat.
2. Have with you a workbook for laboratory classes on parasitology with completed homework.
3. Have the material provided for the home preparation (see Methodology of discipline).
4. The missed classes will be worked out during next week after the student has started classes – on the day of the duty of the teachers assigned to this group.
5. In time, pass the modules according to the work plan and resit the module during the next week if you receive negative assessment.

**The duty of students is a systematic and deep mastery of knowledge, practical skills, professional skills, improving the general cultural level. (Article 52 of the Law of Ukraine "On Education" dated 23 May 1991. № 1060-XI)**

## **SAFETY MEASURES IN CLASSES AT PHARMACOLOGY AND PARASITOTOLOGY DEPARTMENT**

1. Elementary medical ethics or a culture of behavior and work in the workplace.
2. Appear to the classes in clean technical clothing (white gown, hat), because the Department of Parasitology is the department of a group of infectious diseases, including: zoonanthroponosis (toxoplasmosis, trichomonosis, echinococcosis, fasciollosis, toxocarosis, trichinellosis, etc.), accidental scattering of the invasive onset is possible when receiving sick animals or demonstrating material.
3. You should wash your hands after class, whether or not there has been contact with a sick animal, test material (it is advisable to limit food intake in the department).
4. Gently treat virulent and poisonous substances, including acids and alkalis.
5. To follow the fire safety rules, since there may be flammable substances such as alcohols, ether, benzene, xylene, etc. in the classroom.
6. To follow the rules of electrical safety, carefully handle electrical appliances.
7. Before the treatment (cure) of animals, especially small one's (dogs and cats) – listen to workplace safety training.
8. Delivering parasitological material to the department's laboratory, it must be preserved (alcohols, Barbogallo liquid, 10% formaldehyde (organs)) and carefully packed, preventing scattering of invasive onset in the environment.

**TOPIC: Diagnostics and differential diagnosis of dipylidiosis and diphylobothriosis in carnivorous**

**Class location – classroom, laboratory, museum of the department.**

**Purpose of the lesson:** To study the morphological and biological characteristics of pathogens of dipylidiosis and diphylobothriosis in carnivorous (*Dipylidium caninum*, *Diphylobothrium latum*), their place in classification of parasitic worms. To master methods of life-time and post-mortem diagnosis and differential diagnosis. To get acquainted with anthelmintic preparations and with the peculiarities of their use in different types of animals. To study the eggs and larval stages of these parasites and draw them.

**Task:** To study the morphological features of pathogens using macro- and micropreparations, to know the peculiarities of their development. To master features of diagnostics and differential diagnosis of these diseases. To study the samples of anthelmintic preparations, their use for therapeutic and preventive purposes. To master practically basic methods of laboratory diagnostics of a group of cestodous diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

**Auditory work.** To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, appoint treatment. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

**Task performance:**

1. The place of pathogens of dipylidiosis and diphylobothriosis in carnivorous in the world animals system (classification):

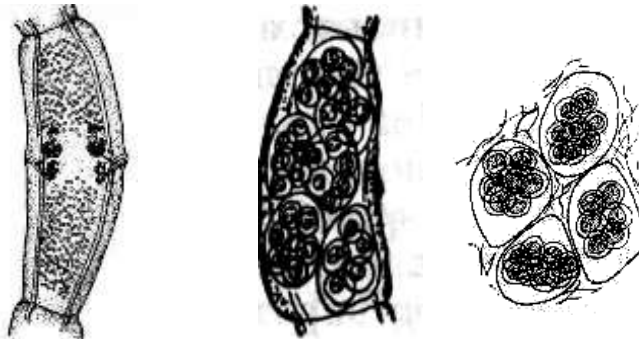
Phylum \_\_\_\_\_ Order \_\_\_\_\_ Order \_\_\_\_\_  
 Class \_\_\_\_\_ Suborder \_\_\_\_\_ Family \_\_\_\_\_  
 Family \_\_\_\_\_ Genus \_\_\_\_\_  
 Genus \_\_\_\_\_

*Dipylidium caninum*

scolex

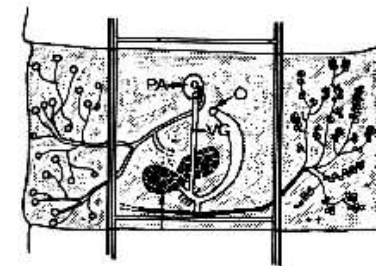


Hermaphrodite proglottid proglottid with cocoons



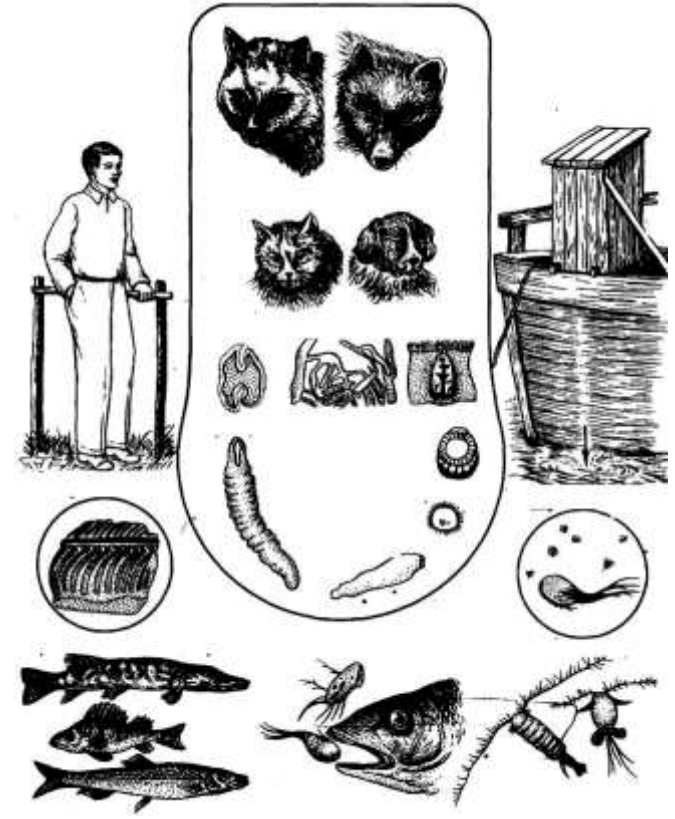
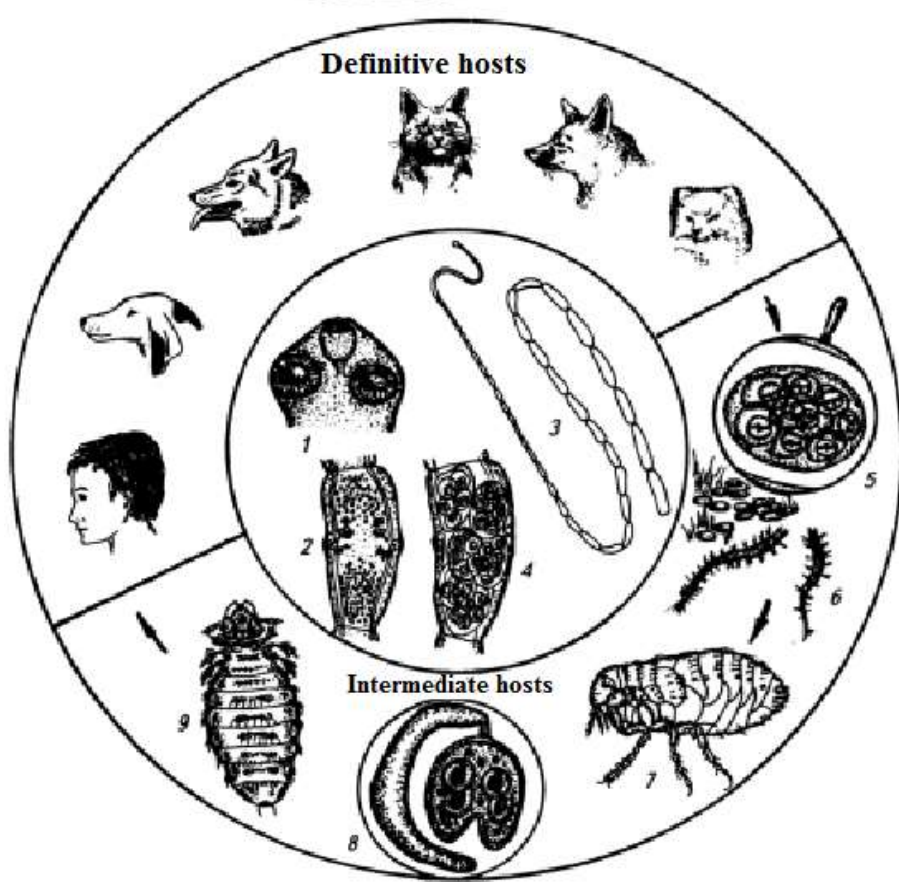
*Diphylobothrium latum*

proglottid



scolex





Life cycle of: *Dipylidium caninum* and *Diphylobothrium latum*

Definition: \_\_\_\_\_

\_\_\_\_\_

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2. Sources and ways of invasion carnivorous by pathogen of dipylidiosis and diphyllbothriosis.

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3. Features of life-time and post-mortem diagnostics, differential diagnosis of dipylidiosis and diphyllbothriosis in carnivorous:

Clinical signs \_\_\_\_\_

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Pathoanatomical changes \_\_\_\_\_

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Special laboratory diagnostics \_\_\_\_\_

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4. Measures of control and ways of prevention of dipylidiosis and diphyllbothriosis in carnivorous. Therapeutic drugs.

Treatment \_\_\_\_\_

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Prevention \_\_\_\_\_

**Material and technical supply.** Microscopes, magnifying glass, permanent macro preparations, temporary and permanent micro preparations, Intermediate hosts. Tables, schemes, invasive animals or freshly obtained faeces from them. Samples of drugs.

« \_\_\_\_\_ » **20** . **Signatures: Student** \_\_\_\_\_ **Lecturer** \_\_\_\_\_



**TOPIC: Diagnostics and differential diagnosis of solipeds' anoplocephalidoses**

**Class location – classroom, laboratory, museum of the department.**

**Purpose of the lesson:** To study the morphological and biological characteristics of pathogens of anoplocephalidoses of horse, and other solipeds (*Anoplocephala magna*, *A. perfoliata*, *Paranoplocephala mamillana*). Their place in classification of parasitic worms. To master methods of life-time and post-mortem diagnosis and differential diagnosis. To get acquainted with anthelmintic preparations and with the peculiarities of their use in different types of animals. To study the eggs and larval stages of these parasites and draw them.

**Task:** To study the morphological features of pathogens of anoplocephalidoses of horse using macro- and micropreparations, to know the peculiarities of their development. To master features of diagnostics and differential diagnosis of these diseases. To study the samples of anthelmintic preparations, their use for therapeutic and preventive purposes. To master practically basic methods of laboratory diagnostics of a group of cestodous diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

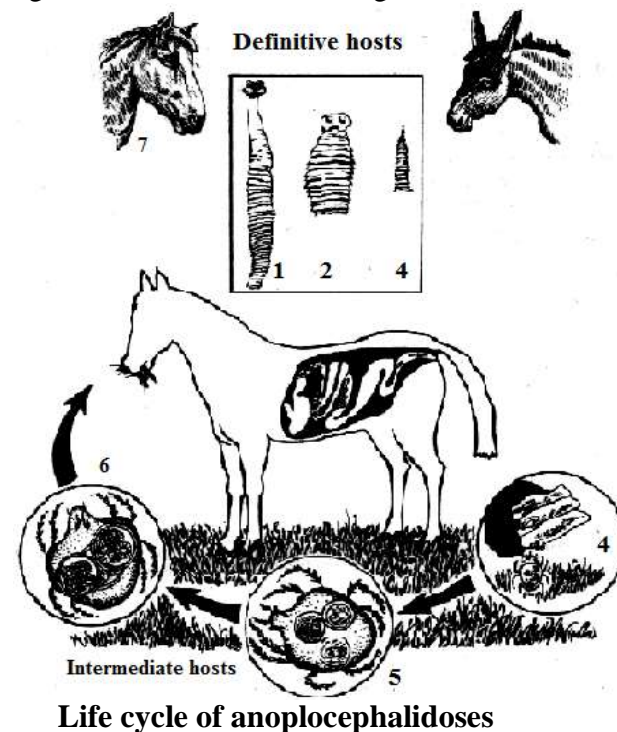
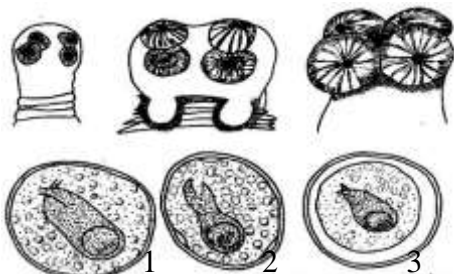
**Auditory work.** To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, appoint treatment. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

**Task performance:**

1. The place of pathogens of anoplocephalidoses of horse in the world animals system:

- Phylum \_\_\_\_\_
- Class \_\_\_\_\_
- Order \_\_\_\_\_
- Suborder \_\_\_\_\_
- Family \_\_\_\_\_
- Genus \_\_\_\_\_
- Genus \_\_\_\_\_

- Morphological characteristics of pathogens:
- 1 – \_\_\_\_\_
  - 2 – \_\_\_\_\_
  - 3 – \_\_\_\_\_
  - 4 – \_\_\_\_\_
  - 5 – \_\_\_\_\_
  - 6 – \_\_\_\_\_
  - 7 – \_\_\_\_\_
  - 1 – \_\_\_\_\_
  - 2 – \_\_\_\_\_
  - 3 – \_\_\_\_\_



2. Sources and ways of invasion solipeds by anoplocephalidoses:

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3. Features of life-time and post-mortem diagnostics, differential diagnosis of anoplocephalidoses of horse:

Clinical signs \_\_\_\_\_

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Pathoanatomical changes \_\_\_\_\_

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Special laboratory diagnostics \_\_\_\_\_

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4. Measures of control and ways of prevention of anoplocephalidoses of horse. Therapeutic drugs.

Treatment \_\_\_\_\_

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Prevention \_\_\_\_\_

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**Material and technical supply.** Microscopes, magnifying glass, permanent macro preparations, temporary and permanent micro preparations, Intermediate hosts. Tables, schemes, invasive animals or freshly obtained faeces from them. Samples of drugs.

« \_\_\_\_\_ » \_\_\_\_\_ 20 .      **Signatures: Student** \_\_\_\_\_      **Lecturer** \_\_\_\_\_

**TOPIC: Diagnostics and differential diagnosis of ruminants' anoplocephalatoses**

**Class location – classroom, laboratory, museum of the department.**

**Purpose of the lesson:** To study the morphological and biological characteristics of pathogens of monieziosis (*Moniezia expansa*, *M. benedeni*), thysanieziosis (*Thysaniezia giardi*), avitellinosis (*Avitellina centripunctata*) and stilesiosis (*Stilesia globipunctata*) of ruminant, their place in classification of parasitic worms. To master methods of life-time and post-mortem diagnosis and differential diagnosis. To get acquainted with anthelmintic preparations and with the peculiarities of their use in different types of animals. To study the eggs and larval stages of these parasites and draw them

**Task:** To study the morphological features of pathogens of ruminants' anoplocephalatoses using macro- and micropreparations, to know the peculiarities of their development. To master features of diagnostics and differential diagnosis of these diseases. To study the samples of anthelmintic preparations, their use for therapeutic and preventive purposes. To master practically basic methods of laboratory diagnostics of a group of cestodous diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

**Auditory work.** To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, appoint treatment. Investigate intermediate hosts for larval invasion of anoplocephalatoses. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

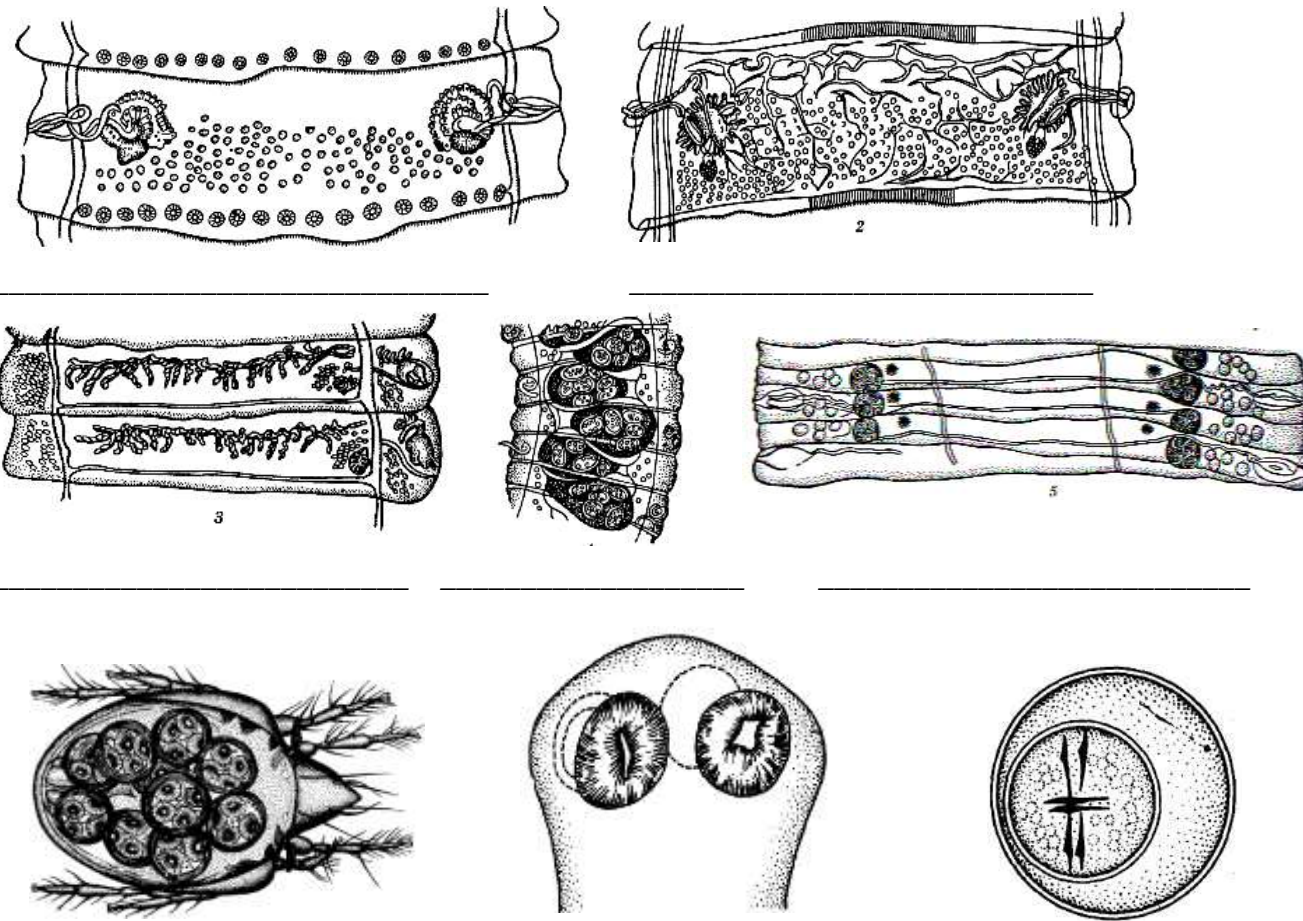
**Task performance:**

1. The place of pathogens of ruminants' anoplocephalatoses in the world animals system (classification):

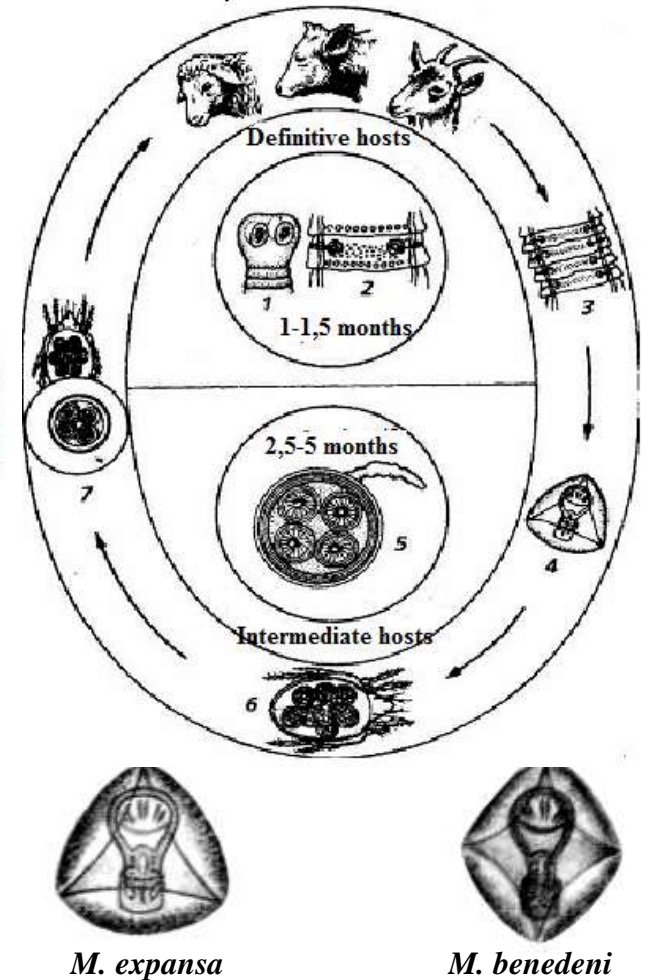
Phylum _____	Family _____	Family _____
Class _____	Genus _____	Genus _____
Order _____		Genus _____
Suborder _____		Genus _____

**Definition:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
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2. Morphological characteristics of pathogens of ruminants' anoplocephalatoses (fill the gaps):



Life cycle of Moniezia



3. Sources and ways of invasion ruminant by anoplocephalatoses:

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4. Features of life-time and post-mortem diagnostics, differential diagnosis of ruminants' anoplocephalatoses:

Clinical signs \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Pathoanatomical changes \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Special laboratory diagnostics \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Measures of control and ways of prevention of ruminants' anoplocephalatoses. Therapeutic drugs.

Treatment \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Prevention \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Material and technical supply.** Microscopes, magnifying glass, permanent macro preparations, temporary and permanent micro preparations, Intermediate hosts. Tables, schemes, invasive animals or freshly obtained faeces from them. Samples of drugs.

« \_\_\_\_ » \_\_\_\_\_ **20** .      **Signatures: Student** \_\_\_\_\_      **Lecturer** \_\_\_\_\_

**TOPIC: Diagnostics and differential diagnosis of cestodoses of waterfowl and land birds**  
***Content module III. «Veterinary cestodology and cestodoses of animals»***

**Class location – classroom, laboratory, museum of the department.**

**Purpose of the lesson:** To study the morphological and biological characteristics of pathogens of cestodoses of waterfowl and land birds (*Drepanidotentia lanceolata*, *D. przewalski*, *Hymenolepis gracilis*, *Fimbriaria fasciolaris*, *Raillietina echinobothrida*, *R. tetragona*, *Davainea proglottina*, *D. meleagris*). Their place in classification of parasitic worms. To master methods of life-time and post-mortem diagnosis and differential diagnosis of cestodoses of waterfowl and land birds. To get acquainted with anthelmintic preparations and with the peculiarities of their use in different types of animals. To study the eggs and larval stages of these parasites and draw them.

**Task:** To study the morphological features of pathogens of these families using macro- and micropreparations, to know the peculiarities of their development. To master features of diagnostics and differential diagnosis of these diseases. To study the samples of anthelmintic preparations, their use for therapeutic and preventive purposes. To master practically basic methods of laboratory diagnostics of a group of cestodous diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

**Auditory work.** To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, appoint treatment. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

**Task performance:**

1. The place of pathogens of cestodoses of waterfowl and land birds in the world animals system (classification):

Phylum _____	Suborder _____	Suborder _____
Class _____	Family _____	Family _____
Order _____	Genus _____	Genus _____
	Genus _____	Genus _____
	Genus _____	

**Definition:** \_\_\_\_\_

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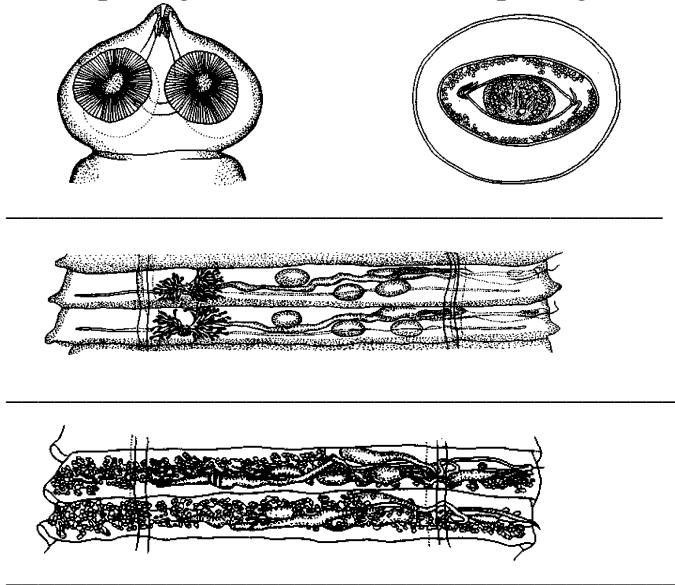
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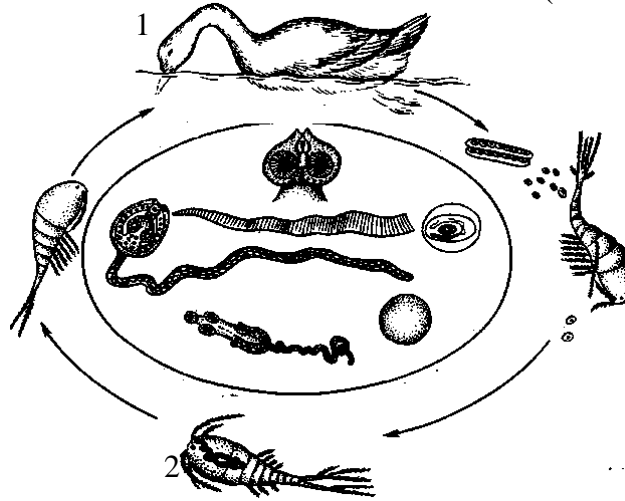
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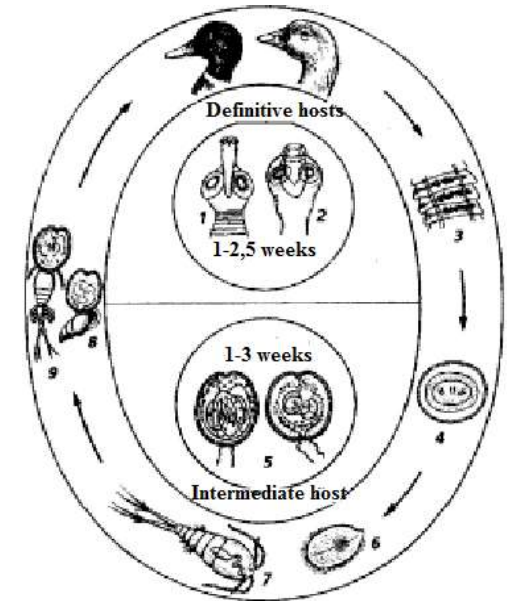
2. Morphological characteristics of pathogens of waterfowl and land birds (fill the gaps):



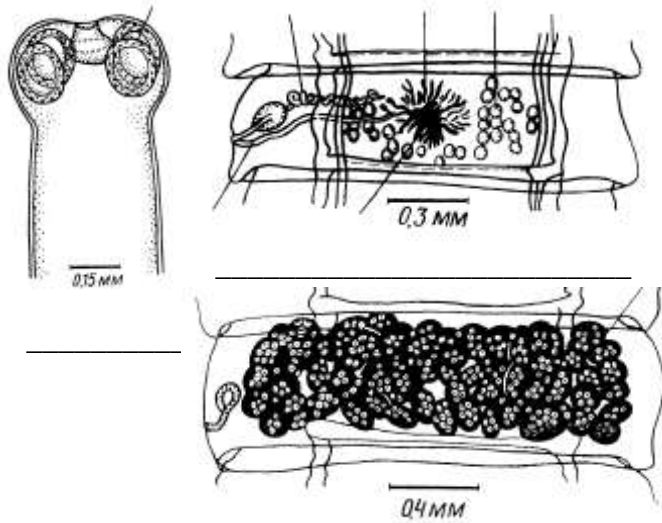
*Drepanidotaenia lanceolata*



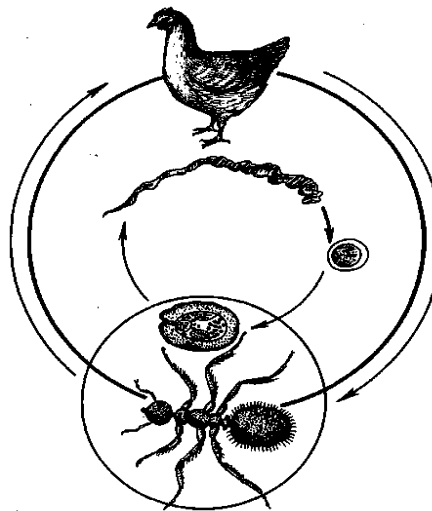
**Life cycle of *Drepanidotenia*:**  
1 – definitive hosts; 2 – intermediate host .



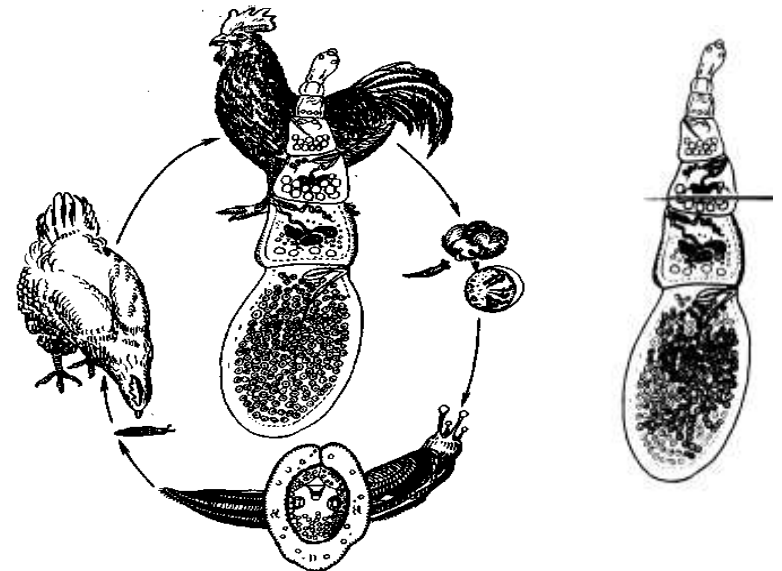
**Life cycle of *Hymenolepis***



*Raillietina echinobothrida*



**Life cycle of *Raillietina***



**Life cycle of *Davainea***

*Davainea proglottina*

3. Sources and ways of invasion poultry by cestodoses:

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4. Features of life-time and post-mortem diagnostics, differential diagnosis of cestodoses of waterfowl and land birds:

Clinical signs \_\_\_\_\_

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Pathoanatomical changes \_\_\_\_\_

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Special laboratory diagnostics \_\_\_\_\_

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5. Measures of control and ways of prevention of cestodoses of waterfowl and land birds. Therapeutic drugs.

Treatment \_\_\_\_\_

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Prevention \_\_\_\_\_

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**Material and technical supply.** Microscopes, magnifying glass, permanent macro preparations, temporary and permanent micro preparations, Intermediate hosts. Tables, schemes, invasive birds or freshly obtained faeces from them. Samples of drugs.

« \_\_\_\_\_ » **20** . **Signatures: Student** \_\_\_\_\_ **Lecturer** \_\_\_\_\_



**TOPIC: Characteristics of nematodes of suborder Oxyurata. Diagnostics and differential diagnosis of solipeds' oxyurosis and rabbits' passalurosis**

**Class location – classroom, laboratory, museum of the department.**

**Purpose of the lesson:** General characteristic of round helminths of the class Nematode, Suboder Oxyurata. To study the morphological and biological characteristics of pathogens of Oxyuratoses of animals (*Oxyuris equi* and *Passalurus ambiguus*), their place in classification of parasitic worms. To master methods of life-time and post-mortem diagnosis and differential diagnosis of nematodoses of animals. To get acquainted with anthelmintic preparations and with the peculiarities of their use in different types of animals. To study the eggs and larval stages of these parasites and draw them.

**Task:** To study the morphological features of pathogens of Nematodes using macro- and micropreparations, to know the peculiarities of their development. To master features of diagnostics and differential diagnosis of the diseases caused by these parasitic agents. To study the samples of anthelmintic preparations, their use for therapeutic and preventive purposes. To master practically basic methods of laboratory diagnostics of a group of nematodous diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

**Auditory work.** To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, appoint treatment. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

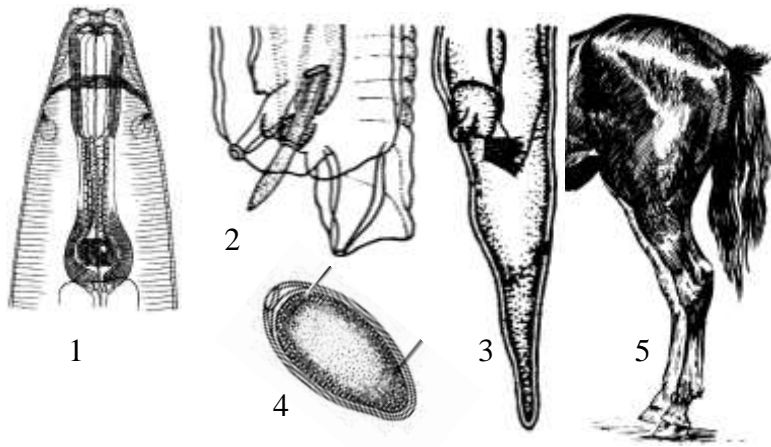
**Task performance:**

1. The place of pathogens of Oxyuratoses of animals in the world animals system (classification):

Phylum _____	Definition: _____
Class _____	_____
Order _____	_____
Suborder _____	_____
Family _____	_____
Genus _____	_____
Genus _____	_____

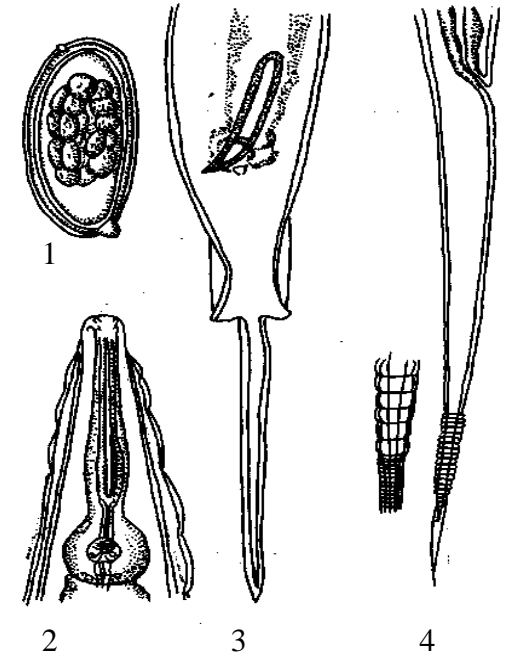
2. Morphological characteristics of pathogens of mammals' oxyuratoses:

*Oxyuris equi*



- 1 - \_\_\_\_\_
- 2 - \_\_\_\_\_
- 3 - \_\_\_\_\_
- 4 - \_\_\_\_\_
- 5 - \_\_\_\_\_

*Passalurus ambiquus*



- 1 - \_\_\_\_\_
- 2 - \_\_\_\_\_
- 3 - \_\_\_\_\_
- 4 - \_\_\_\_\_

3. Sources and ways of invasion solipeds and rabbits by causative agents of oxyuratoses:

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4. Features of life-time and post-mortem diagnostics, differential diagnosis of oxyuratoses in solipeds and rabbits:

Clinical signs \_\_\_\_\_

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Pathoanatomical changes \_\_\_\_\_

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\_\_\_\_\_  
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\_\_\_\_\_

Special laboratory diagnostics \_\_\_\_\_

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\_\_\_\_\_

5. Measures of control and ways of prevention of oxyuriases in solipeds and rabbits. Therapeutic drugs.

Treatment \_\_\_\_\_

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Prevention \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Material and technical supply.** Microscopes, magnifying glass, permanent macro preparations, temporary and permanent micro preparations, Intermediate hosts. Tables, schemes, invasive animals or freshly obtained faeces from them. Samples of drugs.

« \_\_\_\_\_ » **20** . **Signatures: Student** \_\_\_\_\_ **Lecturer** \_\_\_\_\_

**TOPIC: Diagnostics and differential diagnosis of skrjabinemosis of small cattle, heterakidoses of poultry**

**Class location – classroom, laboratory, museum of the department.**

**Purpose of the lesson:** To study the morphological and biological characteristics of pathogens of skrjabinemosis of small cattle (*Skrjabinema ovis*) and heterakidoses of poultry (*Heterakis gallinarum* and *Ganguloterakis dispar*), their place in classification of parasitic worms. To master methods of life-time and post-mortem diagnosis and differential diagnosis of nematodoses of animals. To get acquainted with anthelmintic preparations and with the peculiarities of their use in different types of animals. To study the eggs of these parasites and draw them.

**Task:** To study the morphological features of pathogens of these families using macro- and micropreparations, to know the peculiarities of their development. To master features of diagnostics and differential diagnosis of these diseases. To study the samples of anthelmintic preparations, their use for therapeutic and preventive purposes. To master practically basic methods of laboratory diagnostics of a group of nematodous diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

**Auditory work.** To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, appoint treatment. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

**Task performance:**

1. The place of pathogens of Oxyuratoses of animals in the world animals system:

Phylum \_\_\_\_\_ Family \_\_\_\_\_

Class \_\_\_\_\_ Genus \_\_\_\_\_

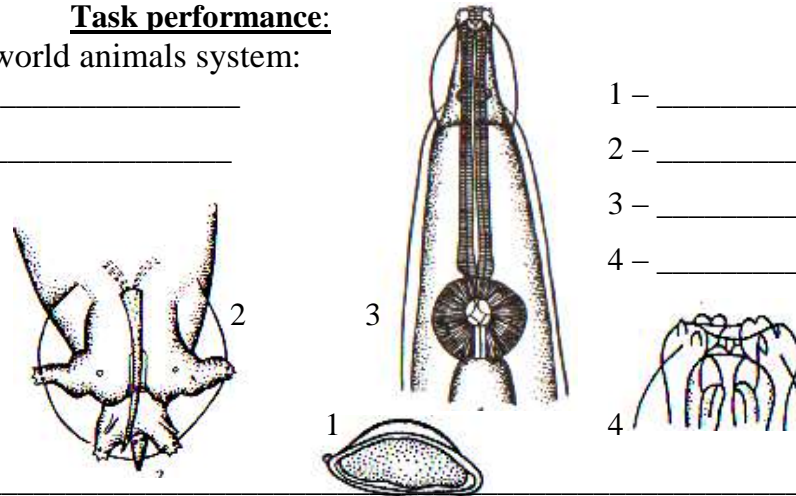
Order \_\_\_\_\_

Suborder \_\_\_\_\_

Family \_\_\_\_\_

Genus \_\_\_\_\_

Genus \_\_\_\_\_



1 – \_\_\_\_\_

2 – \_\_\_\_\_

3 – \_\_\_\_\_

4 – \_\_\_\_\_

**Definition:** \_\_\_\_\_

\_\_\_\_\_

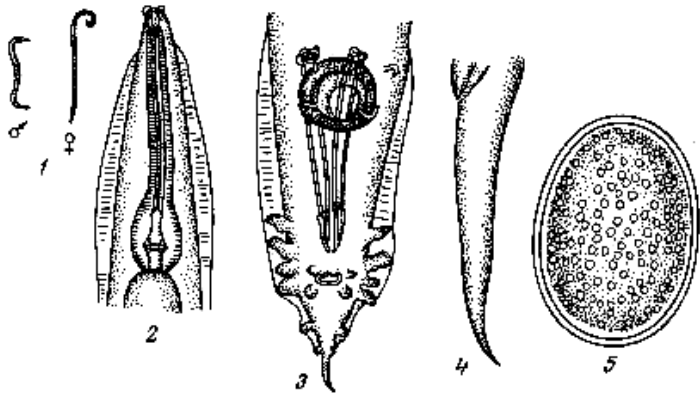
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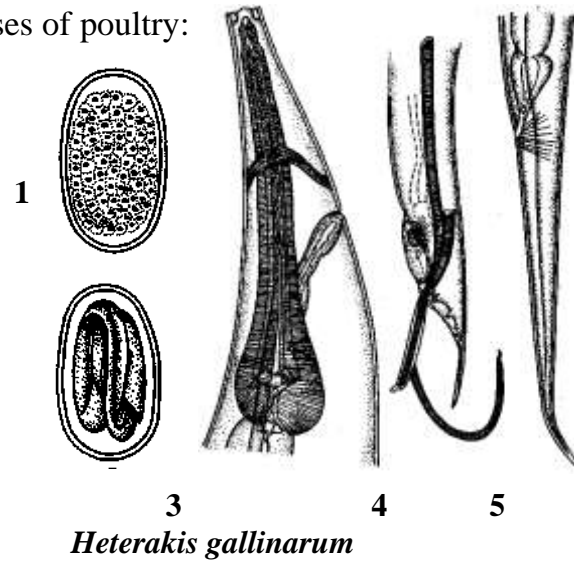
2. Morphological characteristics of pathogens of heterakidoses of poultry:

- 1 - \_\_\_\_\_
- 2 - \_\_\_\_\_
- 3 - \_\_\_\_\_
- 4 - \_\_\_\_\_
- 5 - \_\_\_\_\_

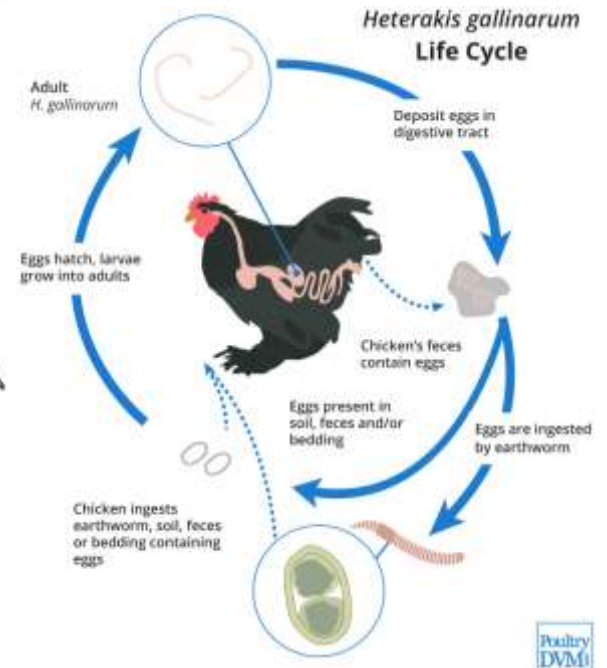
*Ganguloterakis dispar*



- 1 - \_\_\_\_\_
- 2 - \_\_\_\_\_
- 3 - \_\_\_\_\_
- 4 - \_\_\_\_\_
- 5 - \_\_\_\_\_



*Heterakis gallinarum*



**Life cycle of *Heterakis* in poultry:**  
 (<http://www.poultrydvm.com/condition/cecal-worms>)

3. Sources and ways of invasion animals by skrjabinemosis and heterakidoses pathogens:

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4. Features of life-time and post-mortem diagnostics, differential diagnosis of skrjabinemosis and heterakidoses:

Clinical signs \_\_\_\_\_

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Pathoanatomical changes \_\_\_\_\_

Special laboratory diagnostics \_\_\_\_\_

5. Measures of control and ways of prevention of nematodoses of animals. Therapeutic drugs.

Treatment \_\_\_\_\_

Prevention \_\_\_\_\_

**Material and technical supply.** Microscopes, magnifying glass, permanent macro preparations, temporary and permanent micro preparations, Intermediate hosts. Tables, schemes, invasive animals or freshly obtained faeces from them. Samples of drugs.

« \_\_\_\_\_ » **20** . **Signatures: Student** \_\_\_\_\_ **Lecturer** \_\_\_\_\_

**TOPIC: Characteristics of nematodes of suborder Ascaridata. Diagnostics and differential diagnosis of ascariasis of pigs, ascariases of carnivorous**

**Class location** – classroom, laboratory, museum of the department

**Purpose of the lesson:** To study the morphological and biological characteristics of round helminths of the Suborder Ascaridata. To study the morphological and biological characteristics of pathogen of ascariasis of pigs (*Ascaris suum*), ascariases of carnivorous (*Toxocara canis*, *Toxocara mystax*, *Toxascaris leonina*), their place in classification of parasitic worms. To master methods of life-time and post-mortem diagnosis and differential diagnosis of larvae and imaginal ascariasis of pigs, ascariases of carnivorous. To get acquainted with anthelmintic preparations and with the peculiarities of their use in different types of animals. To study the eggs and larval stages of these parasites and draw them.

**Task:** To study the morphological features of pathogens of these families using macro- and micropreparations, to know the peculiarities of their development. To master features of diagnostics and differential diagnosis of these diseases. To study the samples of anthelmintic preparations, their use for therapeutic and preventive purposes. To master practically basic methods of laboratory diagnostics of a group of nematodous diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

**Auditory work.** To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, appoint treatment. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

**Task performance:**

1. The place of pathogens of ascariases of animals in the world animals system (classification):

Phylum \_\_\_\_\_

Class \_\_\_\_\_

Family \_\_\_\_\_

Order \_\_\_\_\_

Genus \_\_\_\_\_

Family \_\_\_\_\_

Suborder \_\_\_\_\_

Genus \_\_\_\_\_

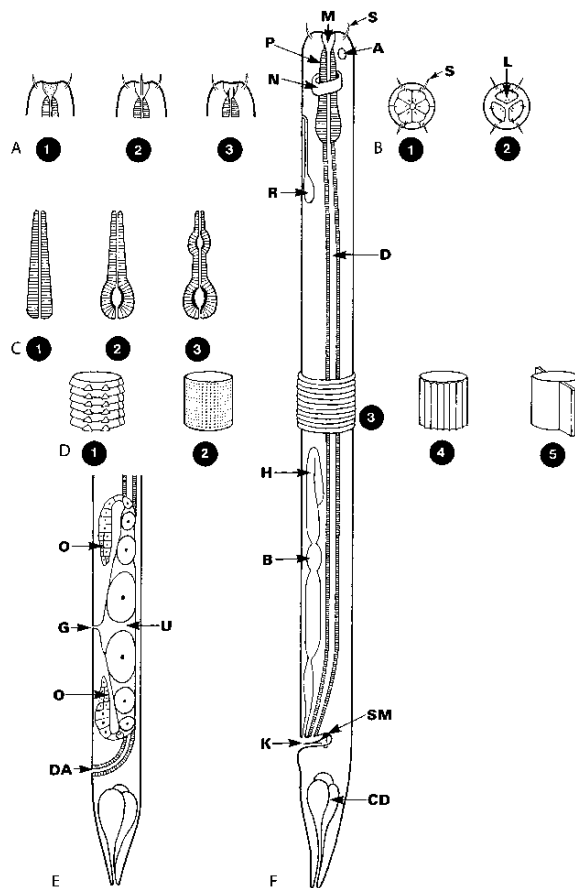
Genus \_\_\_\_\_

**Definition** \_\_\_\_\_

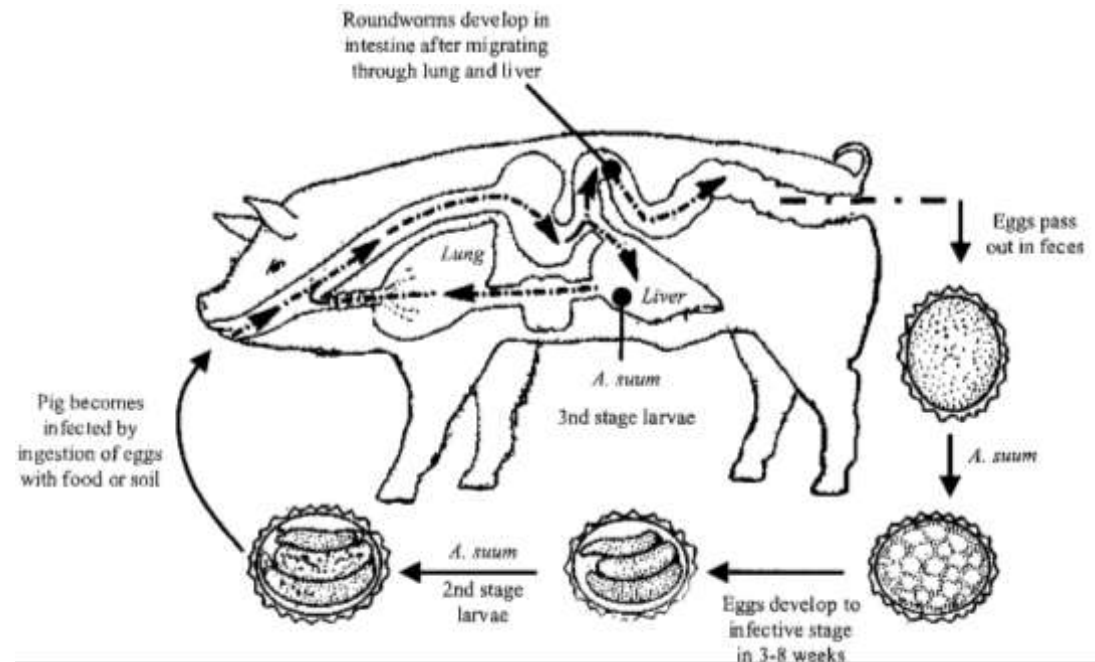
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\_\_\_\_\_  
\_\_\_\_\_

2. Sources and ways of invasion of animals by ascaridatoses: \_\_\_\_\_

3. Morphological features of nematodes and their eggs



Diagrammatic representation of the organization of nematodes. **A** Mouth: 1 = unarmed, 2 = with stylet; 3 = with teeth. **B** Lips: 1=6 lips, 2 = 3 lips, 3 = without lips. **C** Pharynx: 1 = undivided, 2 = with bulbus, 3 = with 2 bulbi. **D** Cuticular stripings: type 5 shows alae. **E** Posterior ends of females. The intestine runs below the sexual system in the midregion. **F** Males. A, amphid; B, seminal vesicula; CD, caudal glands; DA, anus; G, genital opening (vulva); H, testis; K, cloaca; L, lip; M, mouth; N, nerve ring; O, ovary; P, pharynx; R, renette; S, seta; SM, spiculum; U, uterus. (mehlhorn\_h\_encyclopedia\_of\_parasitology)



**Life cycle of *Ascaris suum***

(<https://www.semanticscholar.org/paper/Localized-immunity-to-the-large-roundworm-Ascaris-Solano-Aguilar-Beshah/bf6a667ee3739f5bf55abade0e7d998e5e9d725/figure/0>)

4. Features of life-time and post-mortem diagnostics, differential diagnosis of ascariasis of pig:

Clinical signs \_\_\_\_\_



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Pathoanatomical changes \_\_\_\_\_

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Special laboratory diagnostics \_\_\_\_\_

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5. Measures of control and ways of prevention. Therapeutic drugs.

Treatment \_\_\_\_\_

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Prevention \_\_\_\_\_

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**Definition:** \_\_\_\_\_

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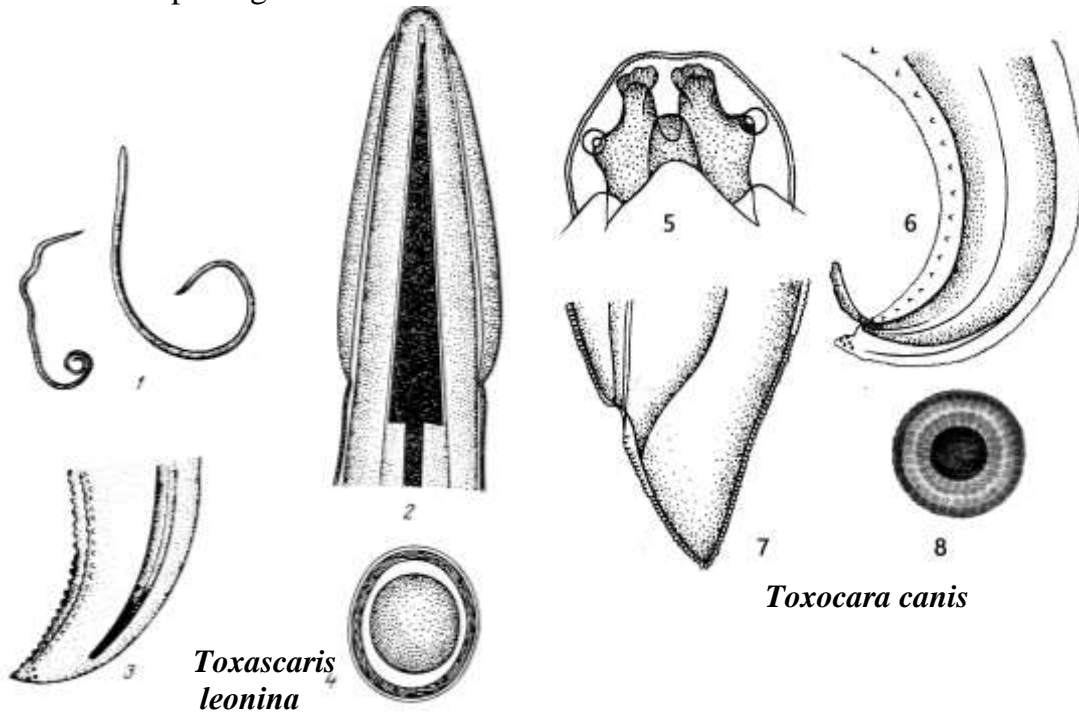
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6. Morphological features ascaridatoses of carnivorous:



*Toxascaris leonina*

*Toxocara canis*

- 1 – \_\_\_\_\_
- 2 – \_\_\_\_\_
- 3 – \_\_\_\_\_
- 4 – \_\_\_\_\_
- 5 – \_\_\_\_\_
- 6 – \_\_\_\_\_
- 7 – \_\_\_\_\_
- 8 – \_\_\_\_\_

7. Sources and ways of invasion carnivorous by ascaridatoses.

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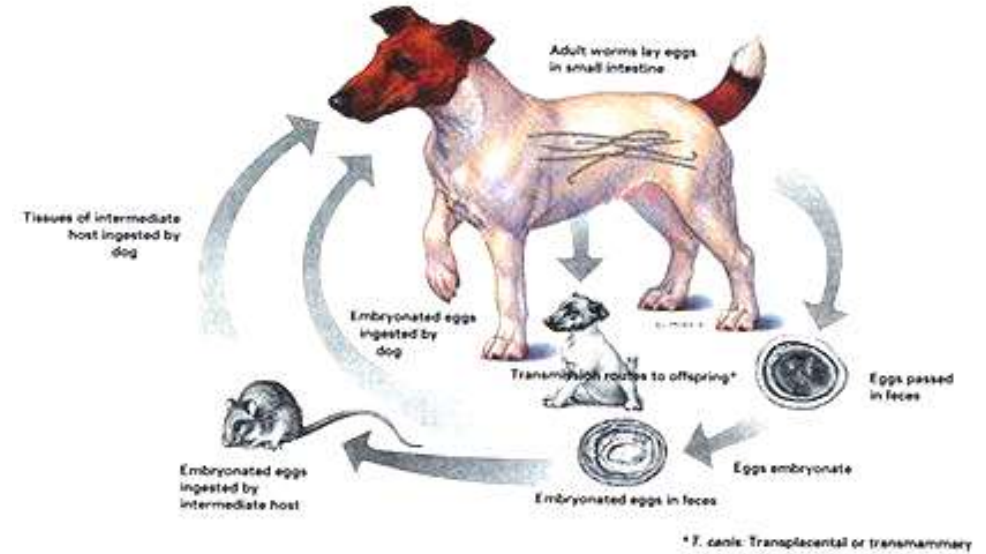


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8. Features of life-time and post-mortem diagnostics, differential diagnosis of ascaridatoses of carnivorous:

Clinical signs \_\_\_\_\_

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**Life cycle of *Toxocara canis***  
 (<https://www.pinterest.at/pin/549439223259679294/?lp=true>)

Pathoanatomical changes \_\_\_\_\_

Special laboratory diagnostics \_\_\_\_\_

9. Measures of control and ways of prevention. Therapeutic drugs.

Treatment \_\_\_\_\_

Prevention \_\_\_\_\_

**Material and technical supply.** Microscopes, magnifying glass, permanent macro preparations, temporary and permanent micro preparations, Intermediate hosts. Tables, schemes, invasive animals or freshly obtained faeces from them. Samples of drugs.

« \_\_\_\_\_ » **20** . **Signatures: Student** \_\_\_\_\_ **Lecturer** \_\_\_\_\_

**TOPIC: Diagnostics and differential diagnosis of solipeds’ parascariosis and calves’ neoascariosis**

**Class location – classroom, laboratory, museum of the department.**

**Purpose of the lesson:** To study the morphological and biological characteristics of pathogens of ascaridatoses invasion of solipeds and cattle (*Parascaris equorum* and *Neoascaris (syn. Toxocara) vitulorum*). Their place in classification of parasitic worms. To master methods of life-time and post-mortem diagnosis and differential diagnosis. To get acquainted with anthelmintic preparations and with the peculiarities of their use in different types of animals. To study the eggs and larval stages of these parasites and draw them.

**Task:** To study the morphological features of pathogens of these families using macro- and micropreparations, to know the peculiarities of their development. To master features of diagnostics and differential diagnosis of these diseases. To study the samples of anthelmintic preparations, their use for therapeutic and preventive purposes. To master practically basic methods of laboratory diagnostics of a group of nematodous diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

**Auditory work.** To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, appoint treatment. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

**Task performance:**

1. The place of pathogens of ascaridatoses of animals in the world animals system (classification):

Phylum _____	Order _____
Class _____	Suborder _____
Family _____	Family _____
Genus _____	Genus _____

**Definition:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

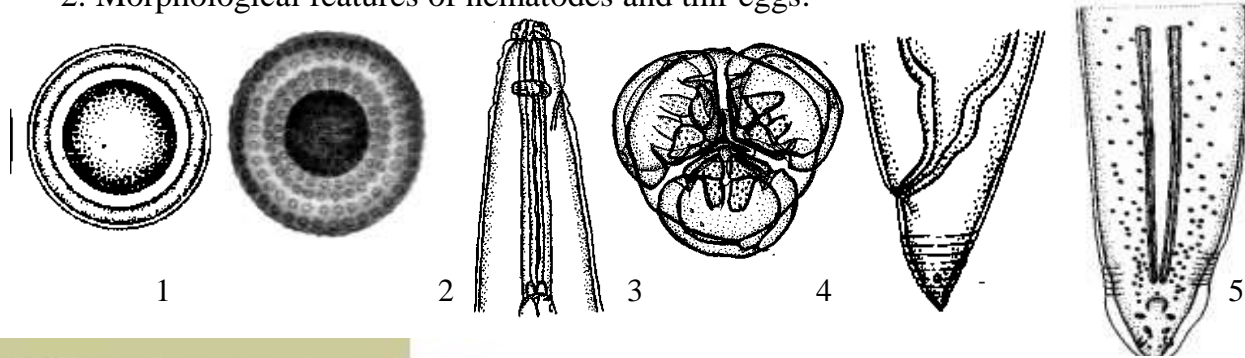
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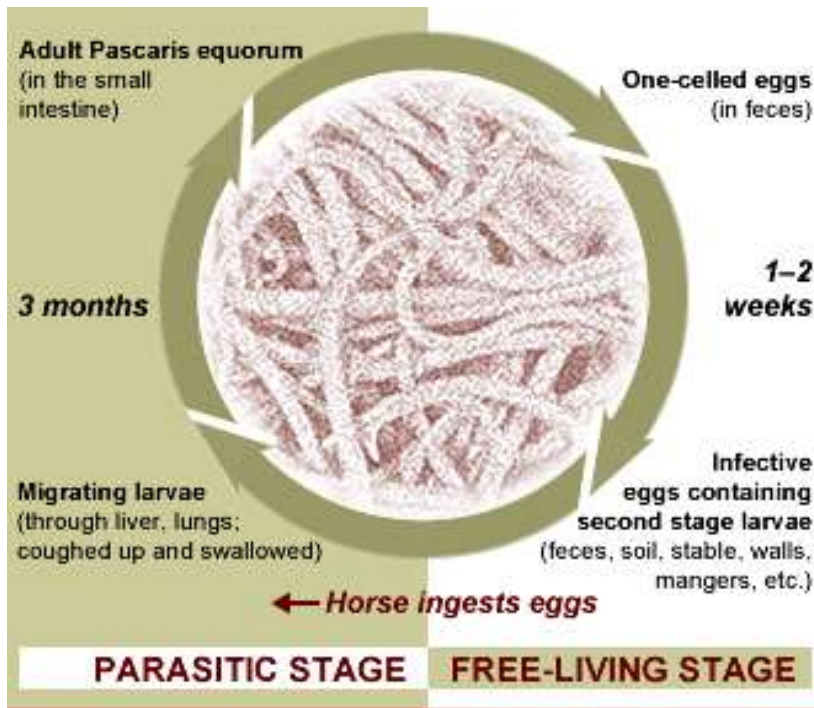
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2. Morphological features of nematodes and their eggs:

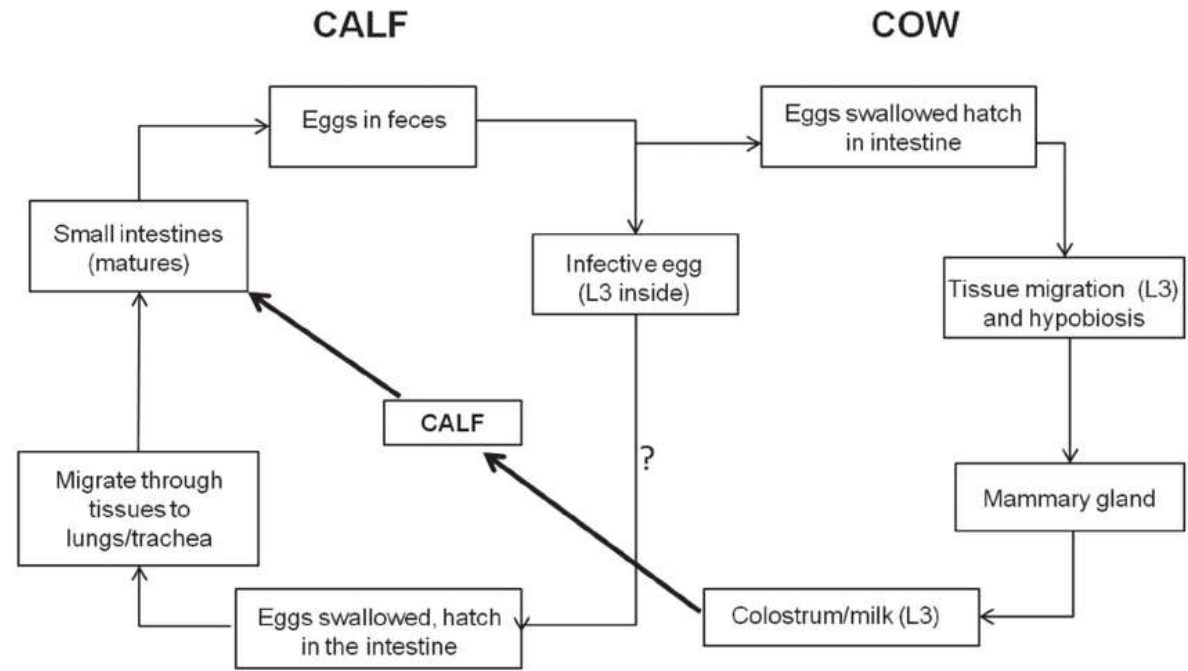


- 1 - \_\_\_\_\_
- 2 - \_\_\_\_\_
- 3 - \_\_\_\_\_
- 4 - \_\_\_\_\_
- 5 - \_\_\_\_\_



**Life cycle of *Parascaris equorum***

[\(https://horses.extension.org/ascarids-in-horses/\)](https://horses.extension.org/ascarids-in-horses/)



**Life cycle of *Neoascaris vitulorum***

[https://www.researchgate.net/publication/234020030\\_Toxocara\\_vitulorum\\_in\\_a\\_bison\\_Bison\\_bison\\_herd\\_from\\_western\\_Canada](https://www.researchgate.net/publication/234020030_Toxocara_vitulorum_in_a_bison_Bison_bison_herd_from_western_Canada)

3. Sources and ways of invasion solipeds and cattle by ascaridatoses pathogens:

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4. Features of life-time and post-mortem diagnostics, differential diagnosis of ascaridatoses of solipeds and cattle:

Clinical signs \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Pathoanatomical changes \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Special laboratory diagnostics \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Measures of control and ways of prevention. Therapeutic drugs..

Treatment \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Prevention \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Material and technical supply.** Microscopes, magnifying glass, permanent macro preparations, temporary and permanent micro preparations, Intermediate hosts. Tables, schemes, invasive animals or freshly obtained faeces from them. Samples of drugs.

« \_\_\_\_ » \_\_\_\_\_ **20** .      **Signatures: Student** \_\_\_\_\_      **Lecturer** \_\_\_\_\_

**TOPIC: Diagnostics and differential diagnosis of ascaridiosis of poultry, anisakidoses of fish and poultry****Class location – classroom, laboratory, museum of the department.**

**Purpose of the lesson:** To study the morphological and biological characteristics of pathogens of ascaridiosis of poultry, anisakidoses of fish and poultry (*Ascaridia galli*, *Anisakis dissimilis* and *A. matina*, *P. decipiens*), Their place in classification of parasitic worms. To master methods of life-time and post-mortem diagnosis and differential diagnosis. To get acquainted with anthelmintic preparations and with the peculiarities of their use in different types of animals. To study the eggs and larval stages of these parasites and draw them.

**Task:** To study the morphological features of pathogens of these families using macro- and micropreparations, to know the peculiarities of their development. To master features of diagnostics and differential diagnosis of these diseases. To study the samples of anthelmintic preparations, their use for therapeutic and preventive purposes. To master practically basic methods of laboratory diagnostics of a group of nematodous diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

**Auditory work.** To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, appoint treatment. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

**Task performance:**

1. The place of pathogens of animals in the world animals system (classification):

Phylum \_\_\_\_\_ Order \_\_\_\_\_

Class \_\_\_\_\_ Suborder \_\_\_\_\_

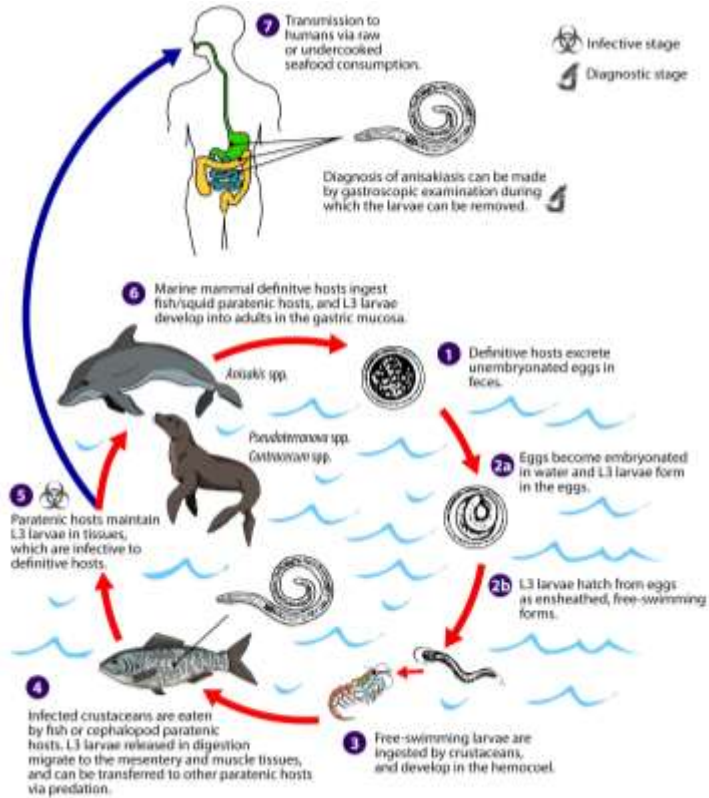
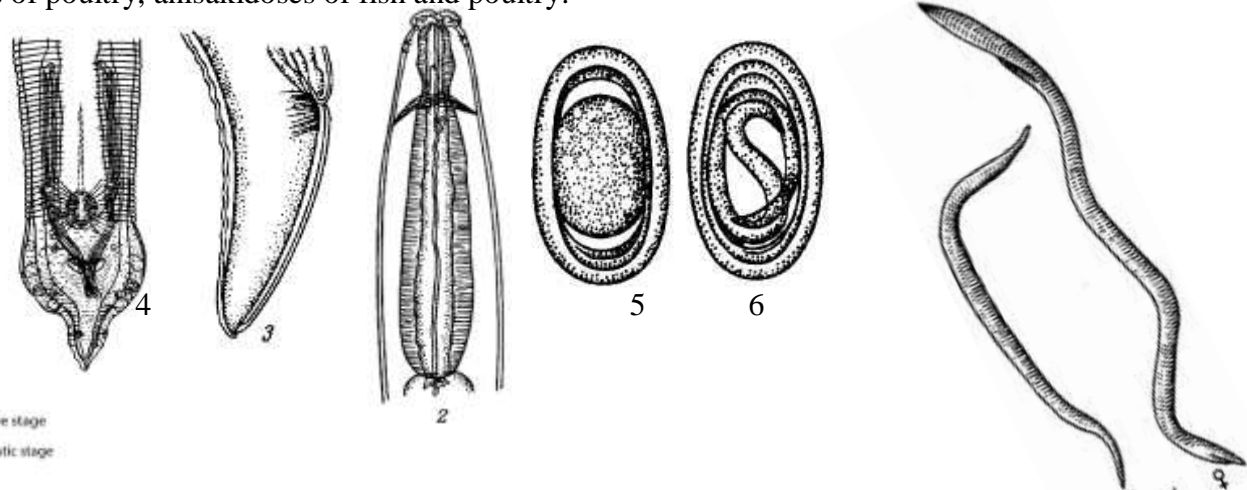
Family *Ascaridiidae* Family *Anisakidae*

Genus *Ascaridia* Genus *Anisakis* Genus *Pseudoterranova*

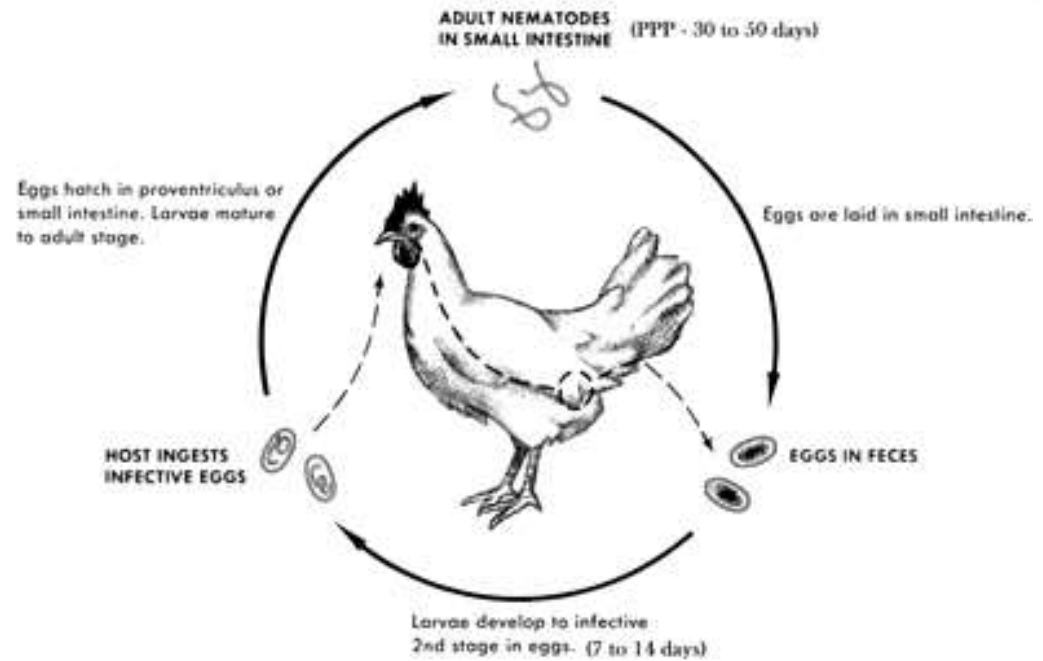
**Definition:** \_\_\_\_\_  
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 \_\_\_\_\_  
 \_\_\_\_\_

2. Morphological features of pathogens of ascaridiosis of poultry, anisakidosis of fish and poultry:

- 1 - \_\_\_\_\_
- 2 - \_\_\_\_\_
- 3 - \_\_\_\_\_
- 4 - \_\_\_\_\_
- 5 - \_\_\_\_\_
- 6 - \_\_\_\_\_



**Life cycle of *Anisakis dissimilis***  
<https://www.cdc.gov/parasites/anisakiasis/biology.html>



**Life cycle of *Ascaridia galli***  
<https://quizlet.com/313243609/091018-ascarids-la-p1-flash-cards/>



3. Sources and ways of invasion of ascaridiosis of poultry, anisakidoses of fish and poultry.

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4. Features of life-time and post-mortem diagnostics, differential diagnosis of ascaridiosis of poultry, anisakidoses of fish and poultry:

Clinical signs \_\_\_\_\_

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Pathoanatomical changes \_\_\_\_\_

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Special laboratory diagnostics \_\_\_\_\_

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5. Measures of control and ways of prevention. Therapeutic drugs.

Treatment \_\_\_\_\_

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Prevention \_\_\_\_\_

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**Material and technical supply.** Microscopes, magnifying glass, permanent macro preparations, temporary and permanent micro preparations, Intermediate hosts. Tables, schemes, invasive animals or freshly obtained faeces from them. Samples of drugs.

« \_\_\_\_ » \_\_\_\_\_ 20 .      **Signatures: Student** \_\_\_\_\_      **Lecturer** \_\_\_\_\_

**TOPIC: Characteristics of nematodes of suborder Strongylata. Diagnostics and differential diagnosis of strongylidoses of digestive tract in solipeds**

**Class location – classroom, laboratory, museum of the department.**

**Purpose of the lesson:** To study the morphological and biological characteristics of pathogens of nematodes of Suborder Strongylata. To study the morphological and biological characteristics of pathogens of strongylidoses of digestive tract in solipeds (*Strongylus equinus*, *Strongylus* (syn. *Delafondia*) *vulgaris*, *Strongylus* (syn. *Alfortia*) *edentatus*, *Triodontophorus serratus*). Their place in classification of parasitic worms. To master methods of life-time and post-mortem diagnosis and differential diagnosis. To get acquainted with anthelmintic preparations and with the peculiarities of their use in different types of animals. To study the eggs and larval stages of these parasites and draw them.

**Task:** To study the morphological features of pathogens of this family using macro- and micropreparations, to know the peculiarities of their development. To master features of diagnostics and differential diagnosis of these diseases. To study the samples of anthelmintic preparations, their use for therapeutic and preventive purposes. To master practically basic methods of laboratory diagnostics of a group of nematodous diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

**Auditory work.** To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, appoint treatment. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

**Task performance:**

1. The place of pathogens of strongylidoses of animals in the world animals system (classification):

Phylum \_\_\_\_\_

Family \_\_\_\_\_

Class \_\_\_\_\_

Підродина \_\_\_\_\_

Підродина \_\_\_\_\_

Order \_\_\_\_\_

Genus \_\_\_\_\_

Genus \_\_\_\_\_

Suborder \_\_\_\_\_

**Definition:** \_\_\_\_\_

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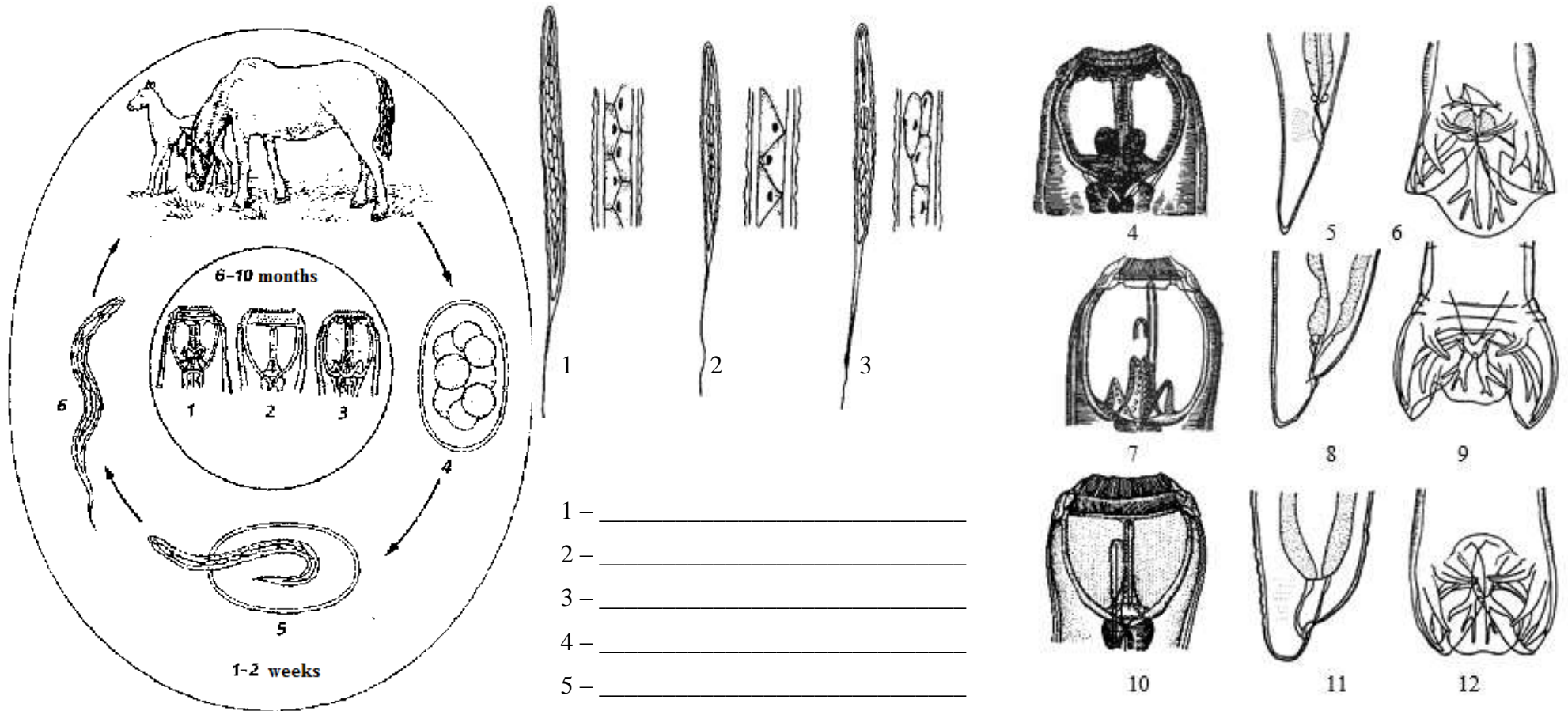


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2. Morphological characteristics of pathogens of strongylidoses of digestive tract in solipeds:



**Life cycle of Strongylidoses of horse:**

- 1, 2, 3 – buccal capsules; 4 – immature egg;
- 5 – the exit of the first stage larvae from the egg;
- 6 – invasive larva.

- 1 – \_\_\_\_\_
- 2 – \_\_\_\_\_
- 3 – \_\_\_\_\_
- 4 – \_\_\_\_\_
- 5 – \_\_\_\_\_
- 6 – \_\_\_\_\_

- 7 – \_\_\_\_\_
- 8 – \_\_\_\_\_
- 9 – \_\_\_\_\_
- 10 – \_\_\_\_\_
- 11 – \_\_\_\_\_
- 12 – \_\_\_\_\_

3. Sources and ways of invasion of animals by strongylidoses of digestive tract in solipeds.

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4. Features of life-time and post-mortem diagnostics, differential diagnosis of strongylidoses of digestive tract in solipeds:

Clinical signs \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Pathoanatomical changes \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Special laboratory diagnostics \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Measures of control and ways of prevention. Therapeutic drugs.

Treatment \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Prevention \_\_\_\_\_  
\_\_\_\_\_

**Material and technical supply.** Microscopes, magnifying glass, permanent macro preparations, temporary and permanent micro preparations, Intermediate hosts. Tables, schemes, invasive animals or freshly obtained faeces from them. Samples of drugs.

« \_\_\_\_ » \_\_\_\_\_ **20** .      **Signatures: Student** \_\_\_\_\_ **Lecturer** \_\_\_\_\_

**TOPIC: Diagnostics and differential diagnosis of strongylatoses of digestive tract in ruminants**

**Class location – classroom, laboratory, museum of the department.**

**Purpose of the lesson:** To study the morphological and biological characteristics of main pathogens of digestive tract strongylatoses in ruminants (*Chabertia ovina*, *Oesophagostomum radiatum*, *Oe. venulosum*, *Oe. columbianum*, *Bunostomum trigonocephalum*, *B. phlebotomum*, *Nematodirus spatiger*, *Haemonchus contortus*). Their place in classification of parasitic worms. To master methods of life-time and post-mortem diagnosis and differential diagnosis. To get acquainted with anthelmintic preparations and with the peculiarities of their use in different types of animals. To study the eggs and larval stages of these parasites and draw them.

**Task:** To study the morphological features of pathogens of these families using macro- and micropreparations, to know the peculiarities of their development. To master features of diagnostics and differential diagnosis of these diseases. To study the samples of anthelmintic preparations, their use for therapeutic and preventive purposes. To master practically basic methods of laboratory diagnostics of a group of nematodous diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

**Auditory work.** To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, appoint treatment. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

**Task performance:**

1. The place of pathogens of animals’ strongylatoses in the world animals system (classification):

Phylum _____	Order _____	Class _____	Suborder _____
Family _____	Family _____	Family _____	Family _____
Genus _____	Genus _____	Genus _____	Genus _____
		Genus _____	

**Definition:** \_\_\_\_\_

\_\_\_\_\_

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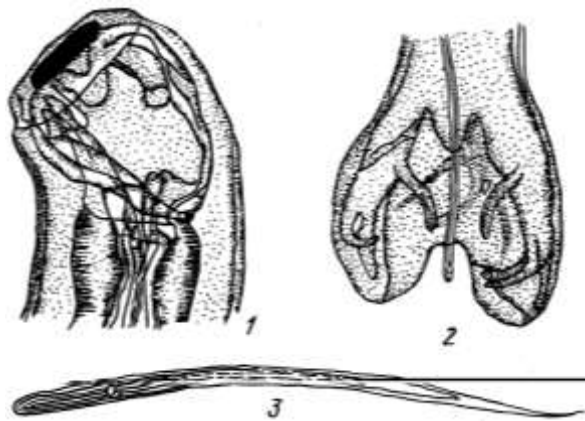
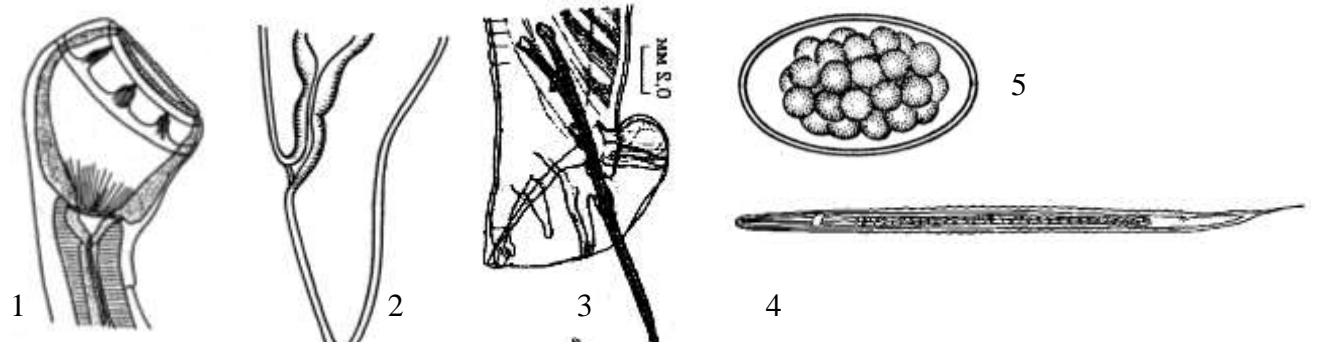
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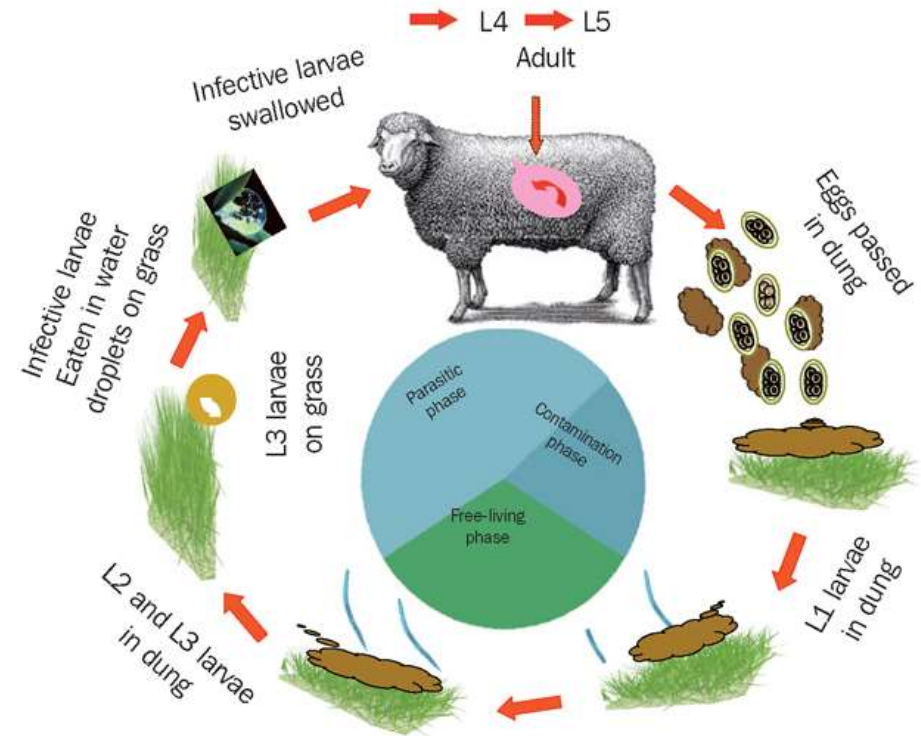
\_\_\_\_\_

2. Morphological features of main species of digestive tract strongylatoses in ruminants:

- 1 - \_\_\_\_\_
- 2 - \_\_\_\_\_
- 3 - \_\_\_\_\_
- 4 - \_\_\_\_\_
- 5 - \_\_\_\_\_

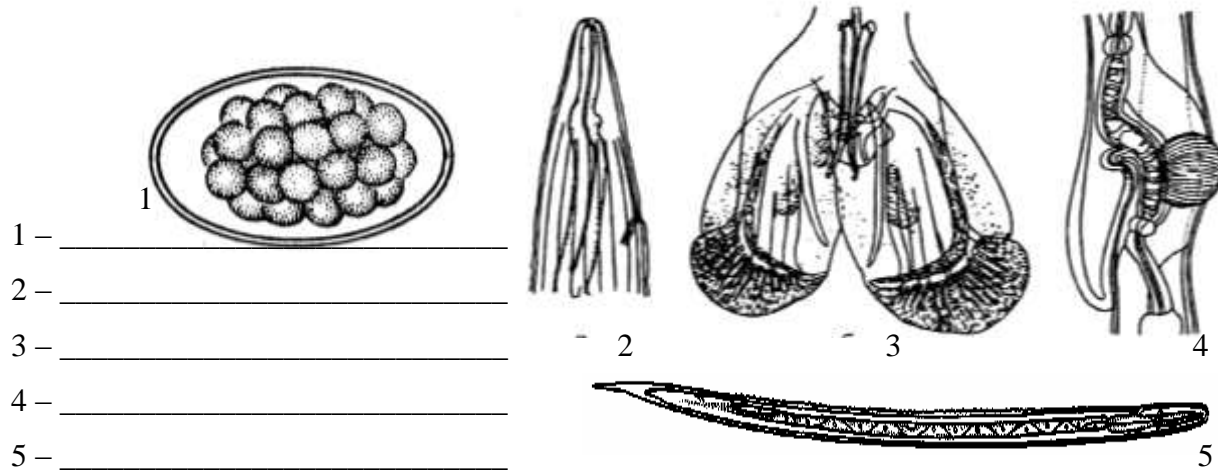


- 1 - \_\_\_\_\_
- 2 - \_\_\_\_\_
- 3 - \_\_\_\_\_

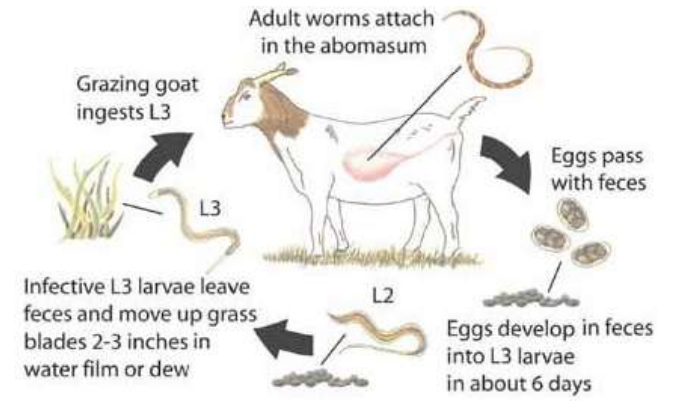


**The general life cycle of gastrointestinal (GI) nematodes.**

(<https://www.vettimes.co.uk/archives/vt09/VT3904502001F001.jpg>)

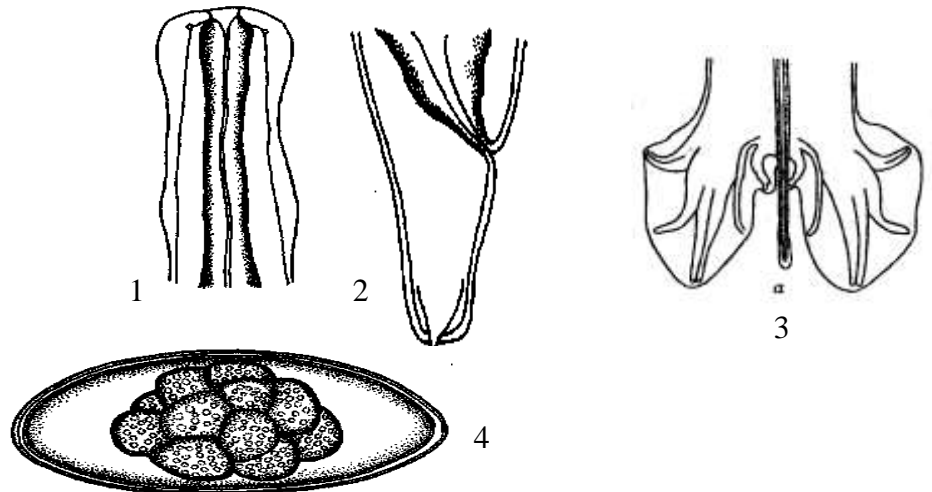


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- 2 - \_\_\_\_\_
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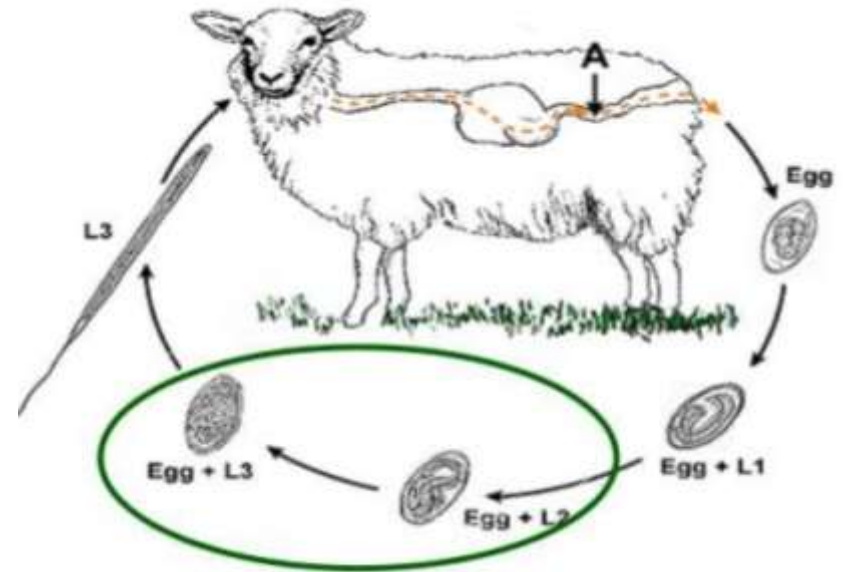


**Life cycle of *Haemonchus contortus***

([https://www.researchgate.net/figure/Life-cycle-of-Haemonchus-contortus-Courtesy-pinterestcom\\_fig1\\_328019525](https://www.researchgate.net/figure/Life-cycle-of-Haemonchus-contortus-Courtesy-pinterestcom_fig1_328019525))



- 1 - \_\_\_\_\_
- 2 - \_\_\_\_\_
- 3 - \_\_\_\_\_
- 4 - \_\_\_\_\_



**Life cycle of *Nematodirus spatiger***

(<https://www.google.com/search?q=Life+cycle+of+Nematodirus+spatiger&tbm=isch&hl=ru&nfr=1&client=firefox-b-d&hl=ru&ved=2ahUKEwi9-bf8zOjnAbWRtyoKHavRAwgQBx0ECAEQKA&biw=1349&bih=654#imgrc=HBQDWgA9W4RF9M&imgdii=2qqM1iixtibIKM>)





**TOPIC: Diagnostics and differential diagnosis of ancylostomatidoses of carnivorous, oesophagostomosis of pigs and amidostomosis of geese**

**Class location – classroom, laboratory, museum of the department.**

**Purpose of the lesson:** To study the morphological and biological characteristics of pathogens of digestive tract strongylatoses of pigs (*Oesophagostomum dentatum*, *Ollulanus tricuspis*, *O. suis*), carnivorous (*Ancylostoma caninum*, *Uncinaria stenocephala*) and geese (*Amidostomum anseris*). Their place in classification of parasitic worms. To master methods of life-time and post-mortem diagnosis and differential diagnosis. To get acquainted with anthelmintic preparations and with the peculiarities of their use in different types of animals. To study the eggs and larval stages of these parasites and draw them.

**Task:** To study the morphological features of pathogens of these families using macro- and micropreparations, to know the peculiarities of their development. To master features of diagnostics and differential diagnosis of these diseases. To study the samples of anthelmintic preparations, their use for therapeutic and preventive purposes. To master practically basic methods of laboratory diagnostics of a group of nematodous diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

**Auditory work.** To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, appoint treatment. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

**Task performance:**

1. The place of pathogens of animals’ strongylatoses in the world animals system (classification):

Phylum _____	Class _____	Order _____	Suborder _____
Family _____	Family _____	Family _____	Family _____
Genus _____	Genus _____	Genus _____	Genus _____
		Genus _____	

**Definition:** \_\_\_\_\_

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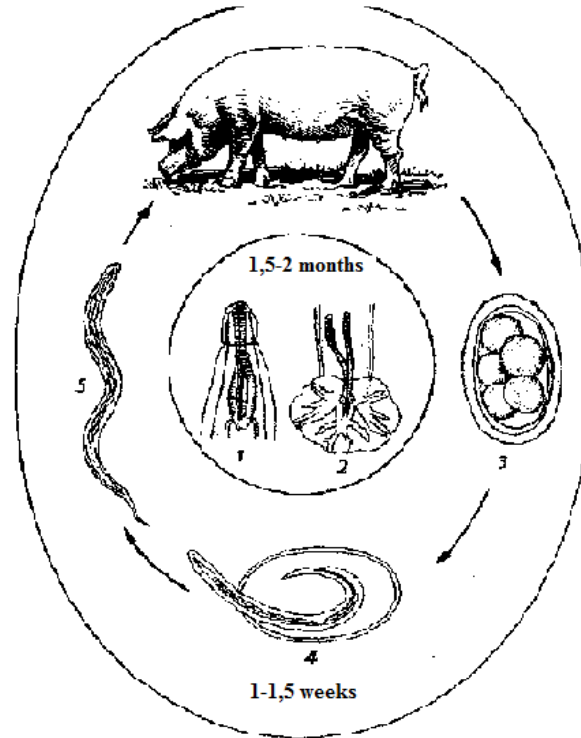
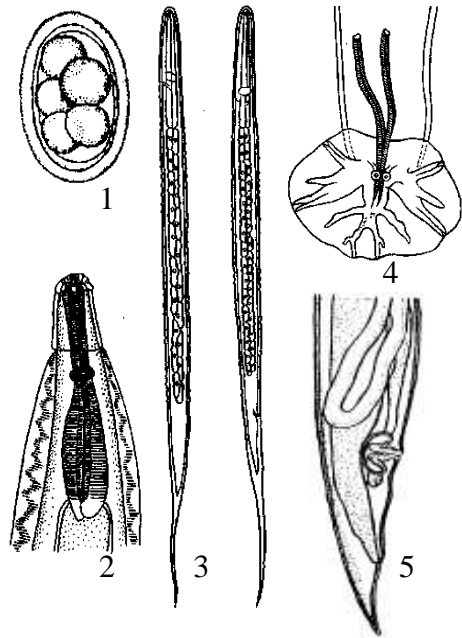
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2. Morphological features of main species digestive tract strongylatoses of pigs, carnivorous and geese:

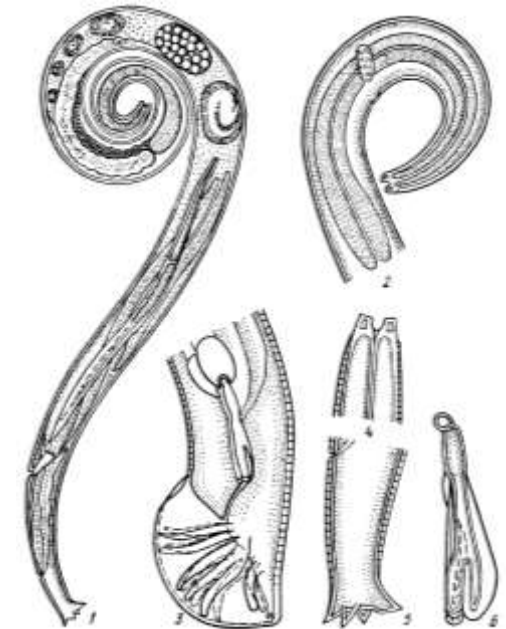
*Oesophagostomum dentatum*



**Life cycle of *Oesophagostomum* spp:**

1 – hea of pathogen; 2 – tail of mail;  
 3 – immature egg; 4 – the exit of the first stage;  
 larvae from the egg 5 – invasive larva.

*Ollulanus tricuspis, O. suis*



- 1 – \_\_\_\_\_
- 2 – \_\_\_\_\_
- 3 – \_\_\_\_\_
- 4 – \_\_\_\_\_
- 5 – \_\_\_\_\_

- 1 – \_\_\_\_\_
- 2 – \_\_\_\_\_
- 3 – \_\_\_\_\_
- 4 – \_\_\_\_\_
- 5 – \_\_\_\_\_
- 6 – \_\_\_\_\_

**Definition:** \_\_\_\_\_

\_\_\_\_\_

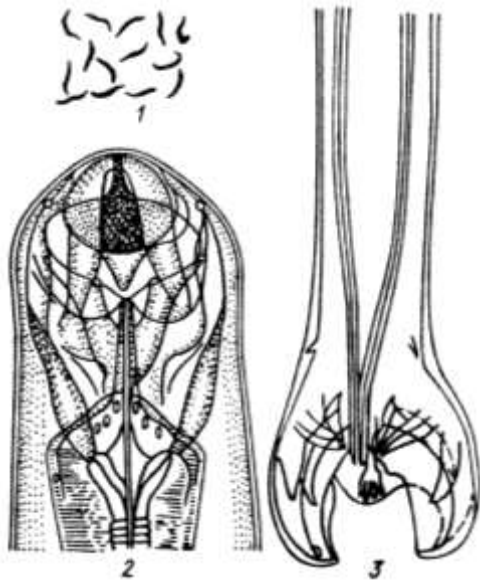
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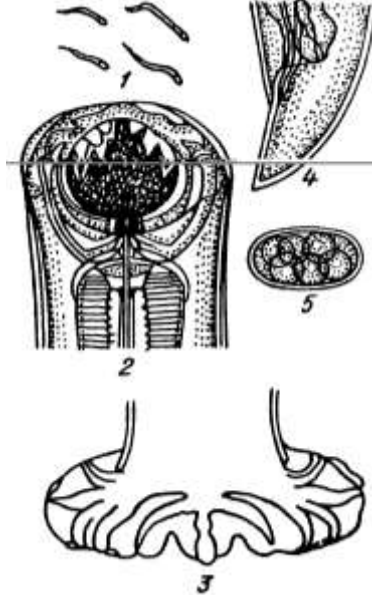
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*Uncinaria stenocephala*



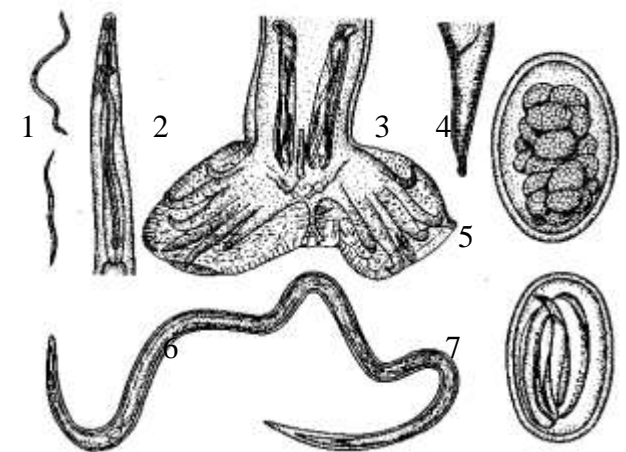
- 1 – \_\_\_\_\_
- 2 – \_\_\_\_\_
- 3 – \_\_\_\_\_

*Ancylostoma caninum*

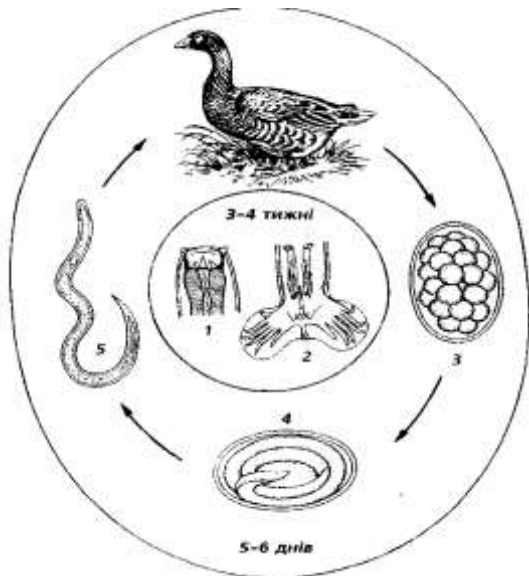


- 1 – \_\_\_\_\_
- 2 – \_\_\_\_\_
- 3 – \_\_\_\_\_
- 4 – \_\_\_\_\_
- 5 – \_\_\_\_\_

*Amidostomum anseris*



- 1 – \_\_\_\_\_
- 2 – \_\_\_\_\_
- 3 – \_\_\_\_\_
- 4 – \_\_\_\_\_
- 5 – \_\_\_\_\_
- 6 – \_\_\_\_\_
- 7 – \_\_\_\_\_



**Life cycle of *Amidostomum anseris*:**  
 1 – head of nematode; 2 – tail of male;  
 3 – immature egg; 4 – mature egg; 5 – invasive larva

3. Sources and ways of invasion of animals by ancylostomatidoses, oesophagostomosis and amidostomosis:

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4. Features of life-time and post-mortem diagnostics, differential diagnosis of digestive tract strongylatoses in pigs, dogs and poultry:

Clinical signs \_\_\_\_\_

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Pathoanatomical changes \_\_\_\_\_

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Special laboratory diagnostics \_\_\_\_\_

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5. Measures of control and ways of prevention. Therapeutic drugs.

Treatment \_\_\_\_\_

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Prevention \_\_\_\_\_

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**Material and technical supply.** Microscopes, magnifying glass, permanent macro preparations, temporary and permanent micro preparations, Intermediate hosts. Tables, schemes, invasive animals or freshly obtained faeces from them. Samples of drugs.

« \_\_\_\_\_ » **20** . **Signatures: Student** \_\_\_\_\_ **Lecturer** \_\_\_\_\_

**TOPIC: Diagnostics and differential diagnosis of strongylatoses of respiratory tract in ruminants****Class location – classroom, laboratory, museum of the department.**

**Purpose of the lesson:** To study the morphological and biological characteristics of pathogens of respiratory tract strongylatoses in ruminants (*Dictyocaulus viviparus*, *D. filaria*, *Muellerius capillaris* and others). Their place in classification of parasitic worms. To master methods of life-time and post-mortem diagnosis and differential diagnosis. To get acquainted with anthelmintic preparations and with the peculiarities of their use in different types of animals. To study the eggs and larval stages of these parasites and draw them.

**Task:** To study the morphological features of pathogens of these families using macro- and micropreparations, to know the peculiarities of their development. To master features of diagnostics and differential diagnosis of these diseases. To study the samples of anthelmintic preparations, their use for therapeutic and preventive purposes. To master practically basic methods of laboratory diagnostics of a group of nematodous diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

**Auditory work.** To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, appoint treatment. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

**Task performance:**

1. The place of pathogens of animals' strongylatoses in the world animals system (classification):

Phylum \_\_\_\_\_ Class \_\_\_\_\_ Order \_\_\_\_\_ Suborder \_\_\_\_\_

Family \_\_\_\_\_ Genus \_\_\_\_\_ Family \_\_\_\_\_ Genus \_\_\_\_\_

**Definition:** \_\_\_\_\_

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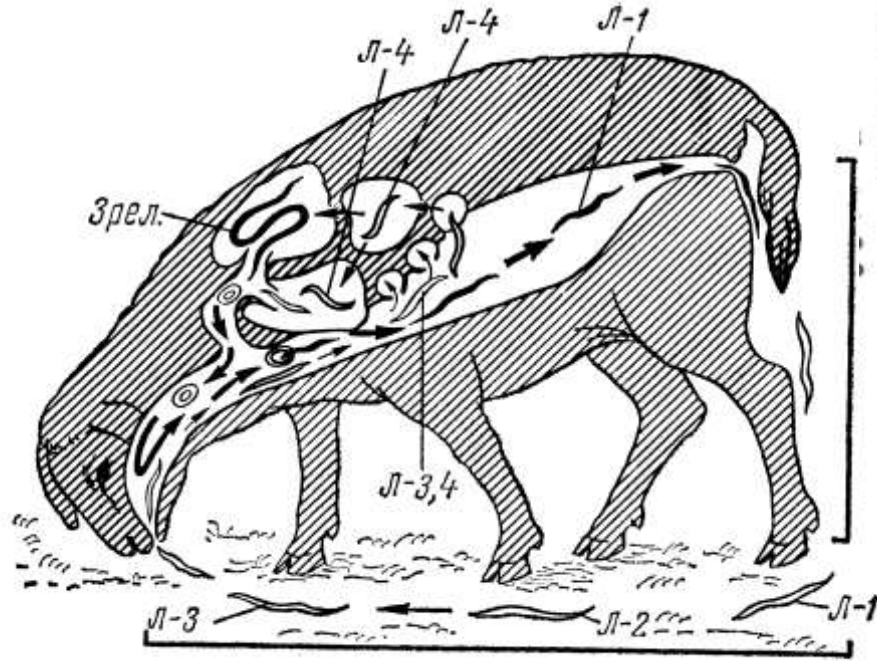
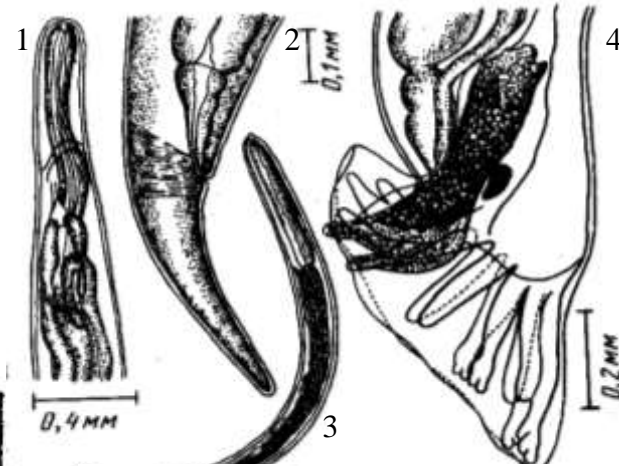


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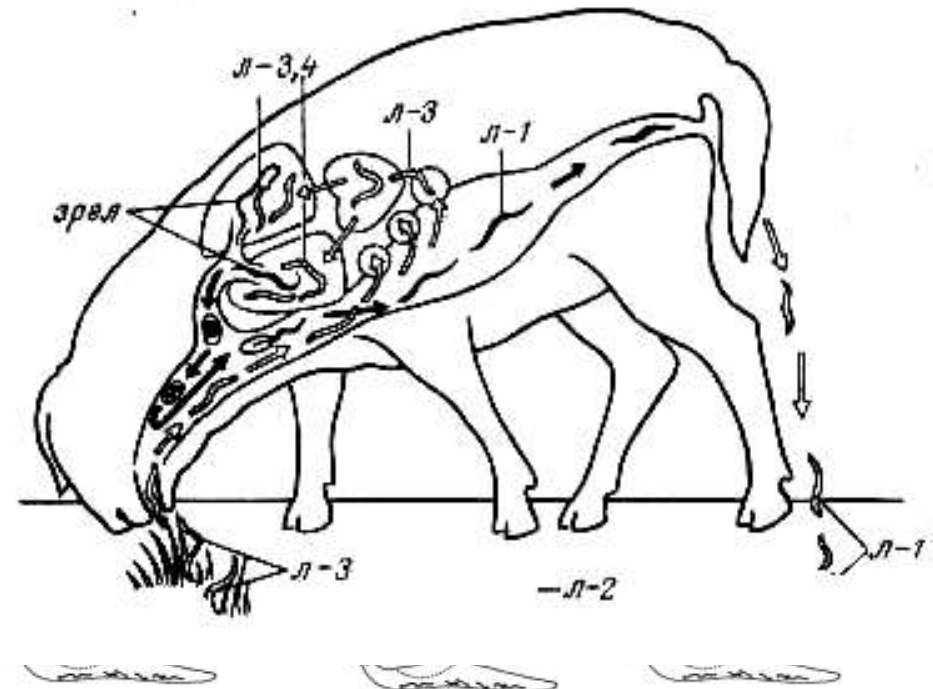
2. Morphological features of main species of respiratory tract strongylatoses in ruminants:

*Dictyocaulus filaria, Dictyocaulus viviparus*

- 1 – \_\_\_\_\_
- 2 – \_\_\_\_\_
- 3 – \_\_\_\_\_
- 4 – \_\_\_\_\_



Life cycle of *Dictyocaulus* spp



Life cycle of *Prothostrongylus* spp

3. Sources and ways of invasion of ruminants by respiratory tract strongylatoses:

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4. Features of life-time and post-mortem diagnostics, differential diagnosis of respiratory tract strongylatoses in ruminants:

Clinical signs \_\_\_\_\_

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Pathoanatomical changes \_\_\_\_\_

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Special laboratory diagnostics \_\_\_\_\_

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5. Measures of control and ways of prevention. Therapeutic drugs.

Treatment \_\_\_\_\_

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Prevention \_\_\_\_\_

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**Material and technical supply.** Microscopes, magnifying glass, permanent macro preparations, temporary and permanent micro preparations, Intermediate hosts. Tables, schemes, invasive animals or freshly obtained faeces from them. Samples of drugs.

« \_\_\_\_\_ » \_\_\_\_\_ **20** .      **Signatures: Student** \_\_\_\_\_      **Lecturer** \_\_\_\_\_

**TOPIC: Diagnostics and differential diagnosis of metastrongylosis of pigs and syngamosis of poultry.  
Content module IV. «Veterinary nematology and nematodoses of animals»**

**Class location – classroom, laboratory, museum of the department.**

**Purpose of the lesson:** To study the morphological and biological characteristics of pathogens of nematodes of respiratory tract – metastrongylosis of pigs (*Metastrongylus elongatus*, *M. salmi*, *M. pudendotectus*) and syngamosis of poultry (*Syngamus trachea*, *S. skrjabinomophora*, *S. merulae*). Their place in classification of parasitic worms. To master methods of life-time and post-mortem diagnosis and differential diagnosis. To get acquainted with anthelmintic preparations and with the peculiarities of their use in different types of animals. To study the eggs and larval stages of these parasites and draw them.

**Task:** To study the morphological features of pathogens of these families using macro- and micropreparations, to know the peculiarities of their development. To master features of diagnostics and differential diagnosis of these diseases. To study the samples of anthelmintic preparations, their use for therapeutic and preventive purposes. To master practically basic methods of laboratory diagnostics of a group of nematodous diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

**Auditory work.** To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, appoint treatment. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

**Task performance:**

1. The place of pathogens of animals in the world animals system (classification):

Phylum \_\_\_\_\_ Order \_\_\_\_\_

Class \_\_\_\_\_ Suborder \_\_\_\_\_

Family \_\_\_\_\_ Family \_\_\_\_\_

Genus \_\_\_\_\_ Genus \_\_\_\_\_

**Definition:** \_\_\_\_\_

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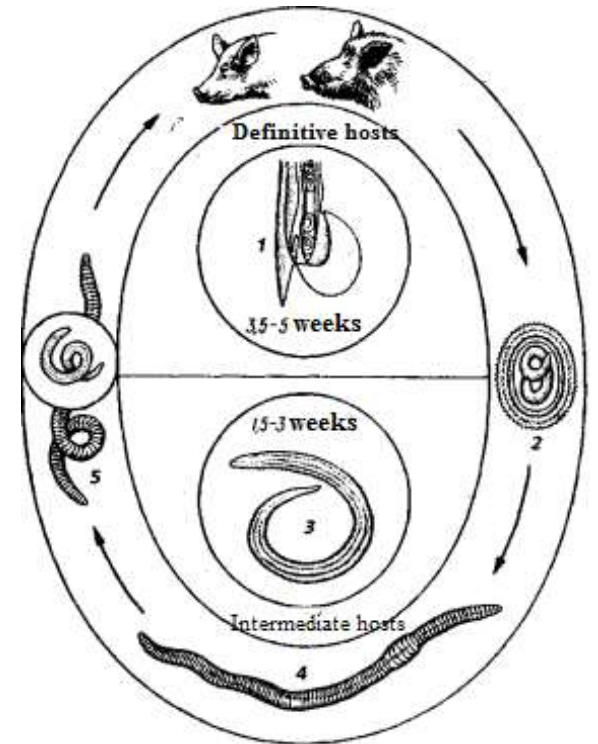
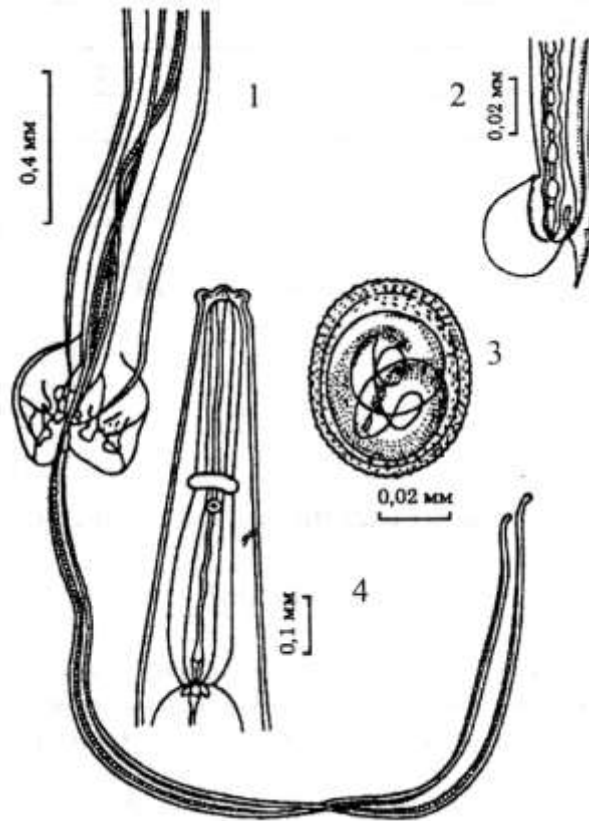


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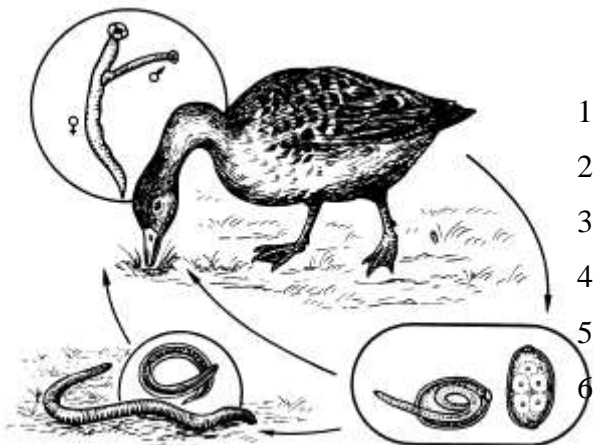
2. Morphological characteristics of pathogens of metastrongylosis of pigs and syngamosis of poultry:

- 1 - \_\_\_\_\_
- 2 - \_\_\_\_\_
- 3 - \_\_\_\_\_
- 4 - \_\_\_\_\_



**Life cycle of *Metastrongylus* spp:**

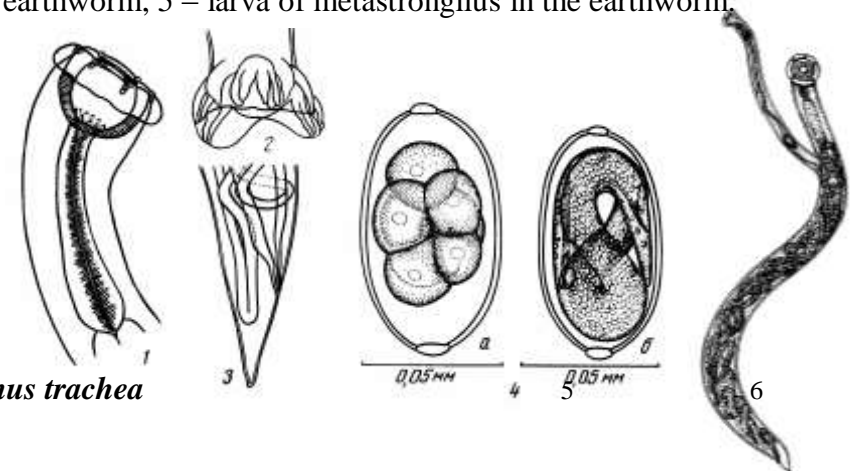
1 - tail of female; 2 - egg; 3 - invasive larva; 4 - earthworm; 5 - larva of metastrongilus in the earthworm.



**Life cycle of *Syngamus* spp**

- 1 - \_\_\_\_\_
- 2 - \_\_\_\_\_
- 3 - \_\_\_\_\_
- 4 - \_\_\_\_\_
- 5 - \_\_\_\_\_
- 6 - \_\_\_\_\_

***Syngamus trachea***



3. Sources and ways of invasion of animals by metastrongylosis and syngamosis:

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4. Features of life-time and post-mortem diagnostics, differential diagnosis of metastrongylosis of pigs and syngamosis of poultry:

Clinical signs \_\_\_\_\_

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Pathoanatomical changes \_\_\_\_\_

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Special laboratory diagnostics \_\_\_\_\_

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5. Measures of control and ways of prevention. Therapeutic drugs.

Treatment \_\_\_\_\_

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Prevention \_\_\_\_\_

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**Material and technical supply.** Microscopes, magnifying glass, permanent macro preparations, temporary and permanent micro preparations, Intermediate hosts. Tables, schemes, invasive animals or freshly obtained faeces from them. Samples of drugs.

« \_\_\_\_\_ » \_\_\_\_\_ 20 .      **Signatures: Student** \_\_\_\_\_      **Lecturer** \_\_\_\_\_