

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

(Surname and Name)

Lecturer: PhD. _____

Surname

Name, patronymic

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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”.

Second 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 PARASITOLOGY 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: 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».

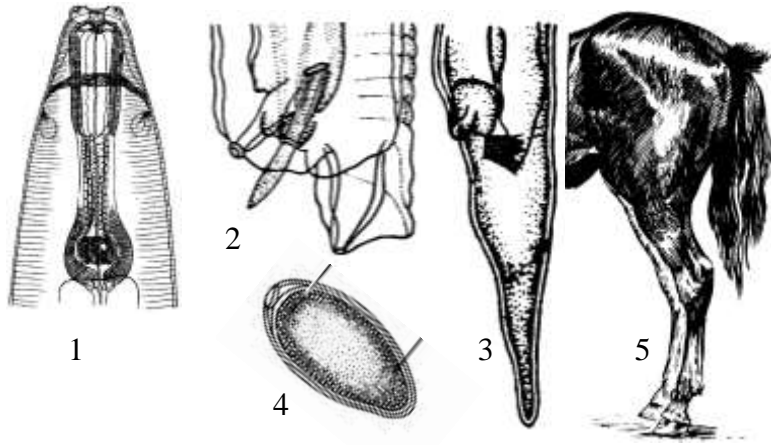
Auditory work. To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macropreparations), temporary and permanent micropreparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential 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:

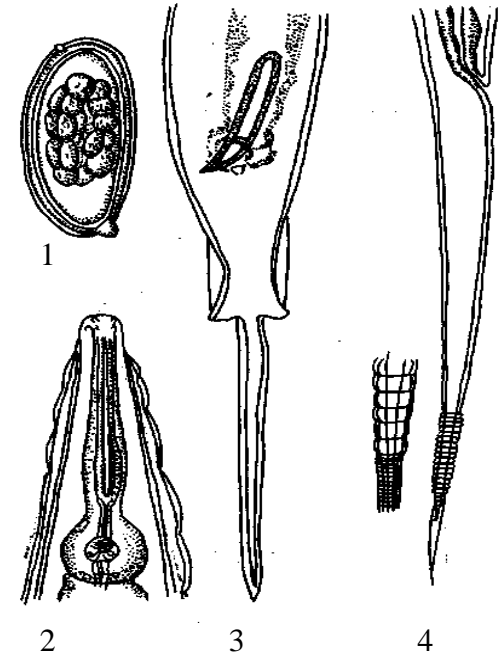


Oxyuris equi

- 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:

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

Clinical signs _____

Pathoanatomical changes _____

Special laboratory diagnostics _____

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

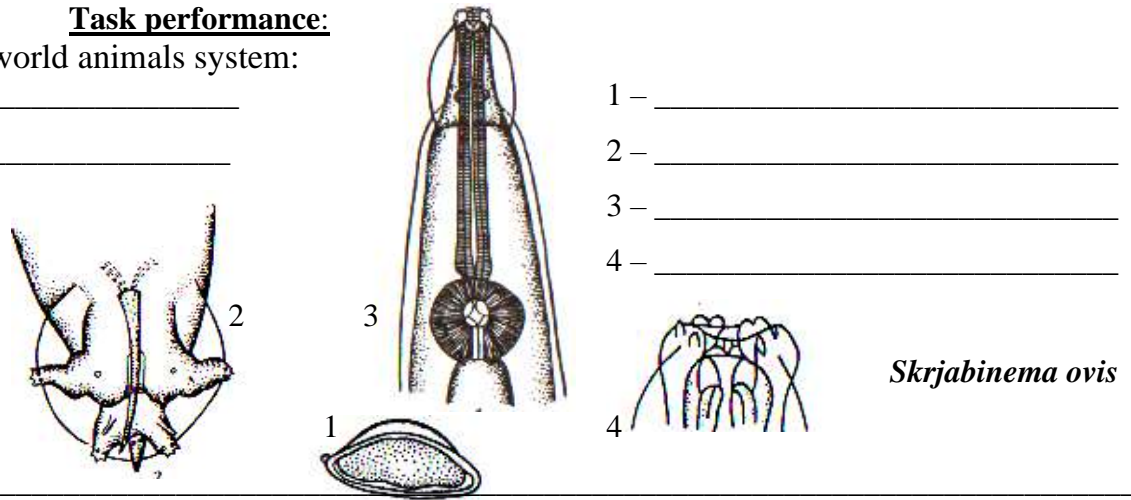
Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Veterinary Parasitology» at the «Distance learning portal (MOODLE) of SBTU».

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 _____



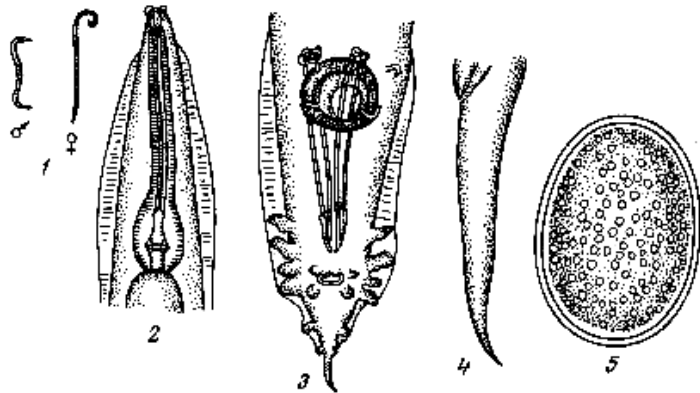
Skrjabinema ovis

Definition: _____

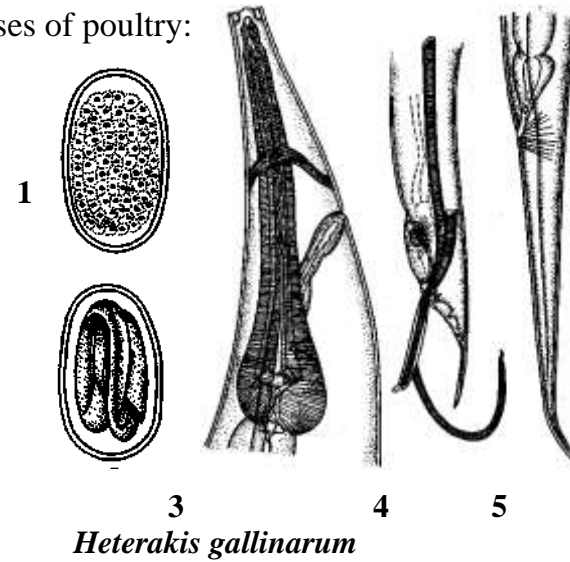
2. Morphological characteristics of pathogens of heterakidoses of poultry:

- 1 - _____
- 2 - _____
- 3 - _____
- 4 - _____
- 5 - _____

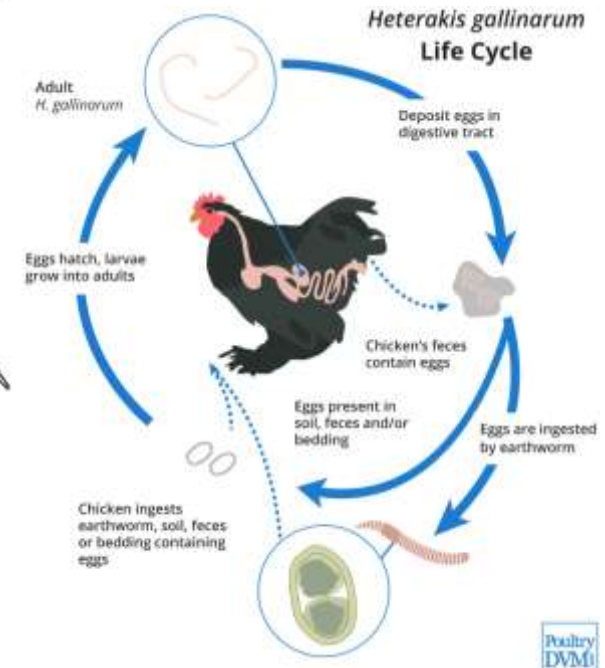
Ganguloterakis dispar



- 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:

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

Clinical signs _____

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 _____

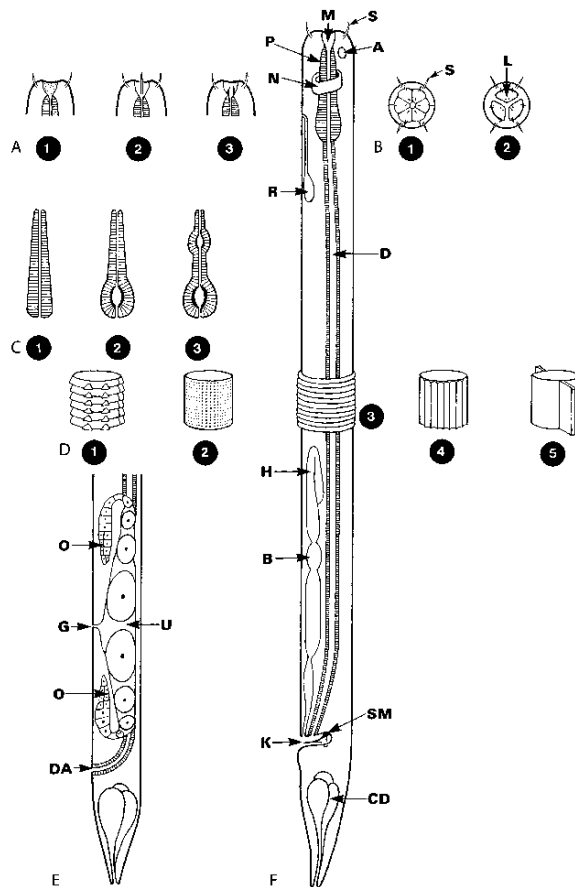
Genus _____

Genus _____

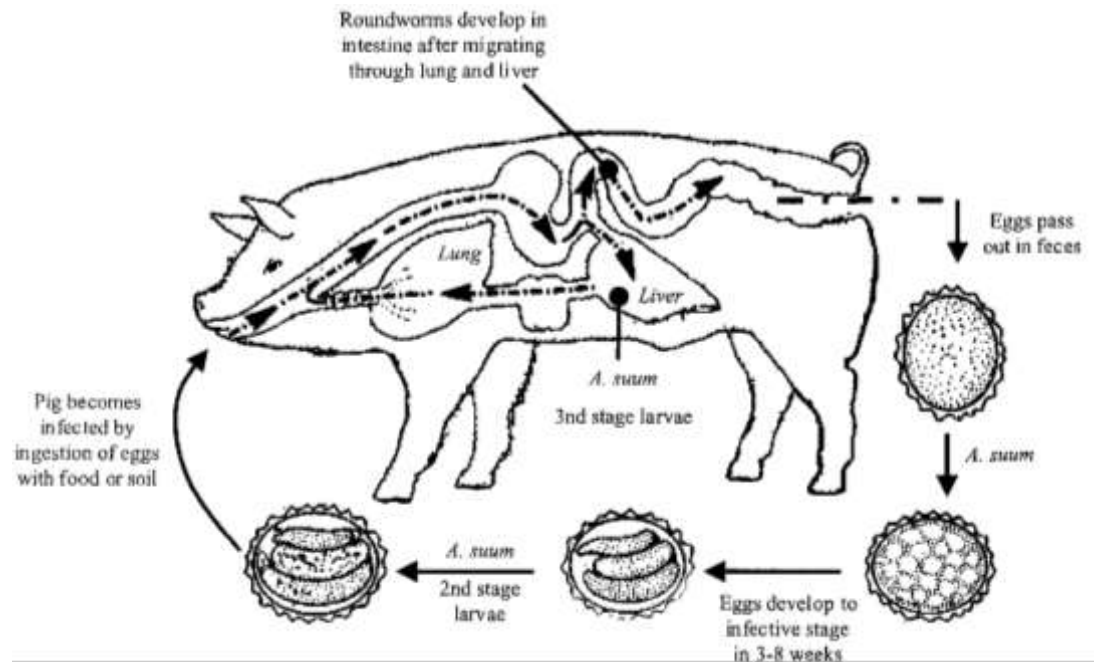
Definition _____

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/bf6a667e3739f5bff55abade0e7d998e5e9d725/figure/0>)

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

Clinical signs _____

Pathoanatomical changes _____

Special laboratory diagnostics _____

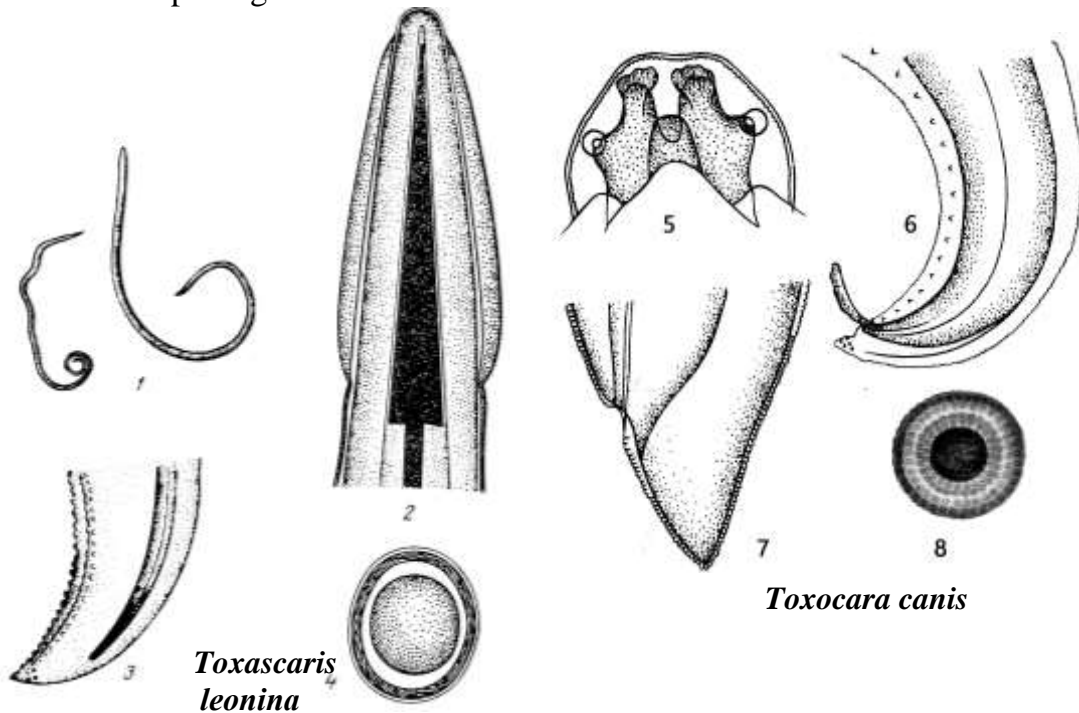
5. Measures of control and ways of prevention. Therapeutic drugs.

Treatment _____

Prevention _____

Definition: _____

6. Morphological features ascaridatoses of carnivorous:



Toxascaris leonina

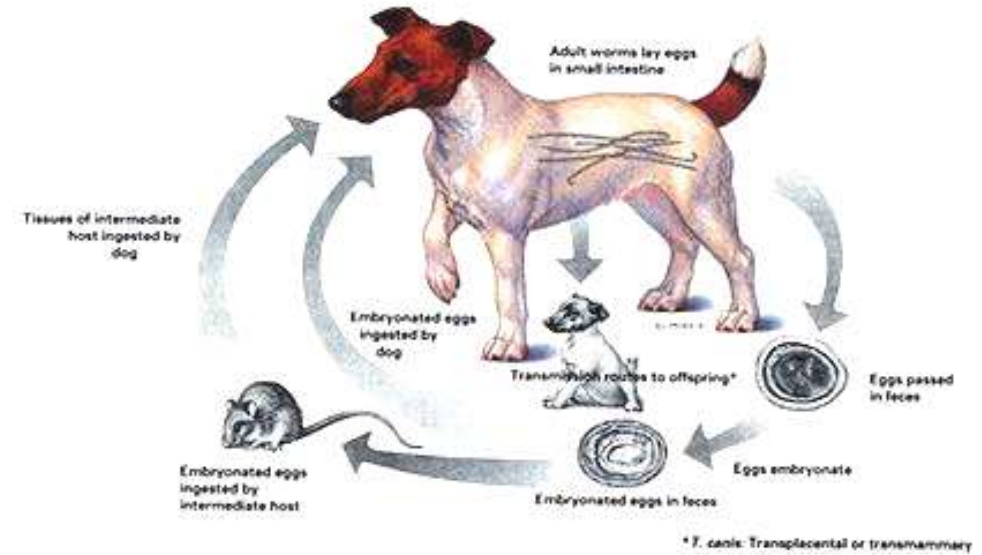
Toxocara canis

- 1 – _____
- 2 – _____
- 3 – _____
- 4 – _____
- 5 – _____
- 6 – _____
- 7 – _____
- 8 – _____

7. Sources and ways of invasion carnivorous by ascaridatoses.

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

Clinical signs _____



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' parascaris and calves' neoascaris**Class location – classroom, laboratory, museum of the department.**

Purpose of the lesson: To study the morphological and biological characteristics of pathogens of ascaridatosis 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 ascaridatosis of animals in the world animals system (classification):

Phylum _____ Order _____

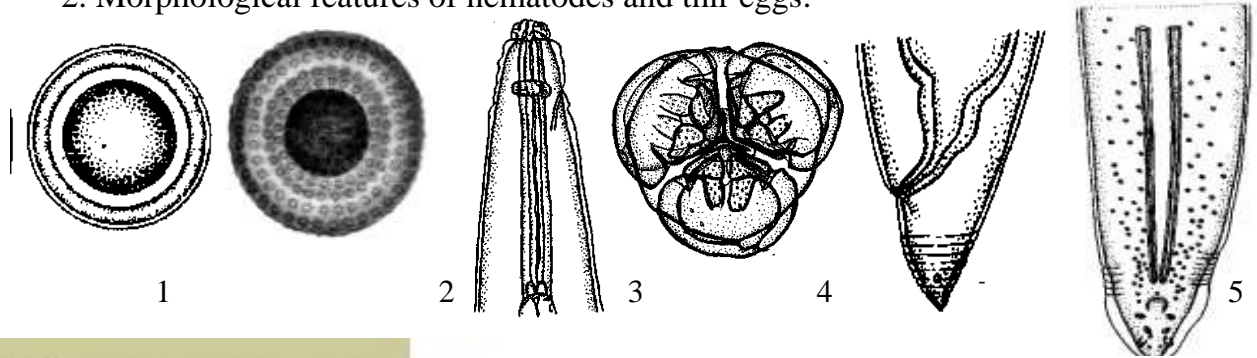
Class _____ Suborder _____

Family _____ Family _____

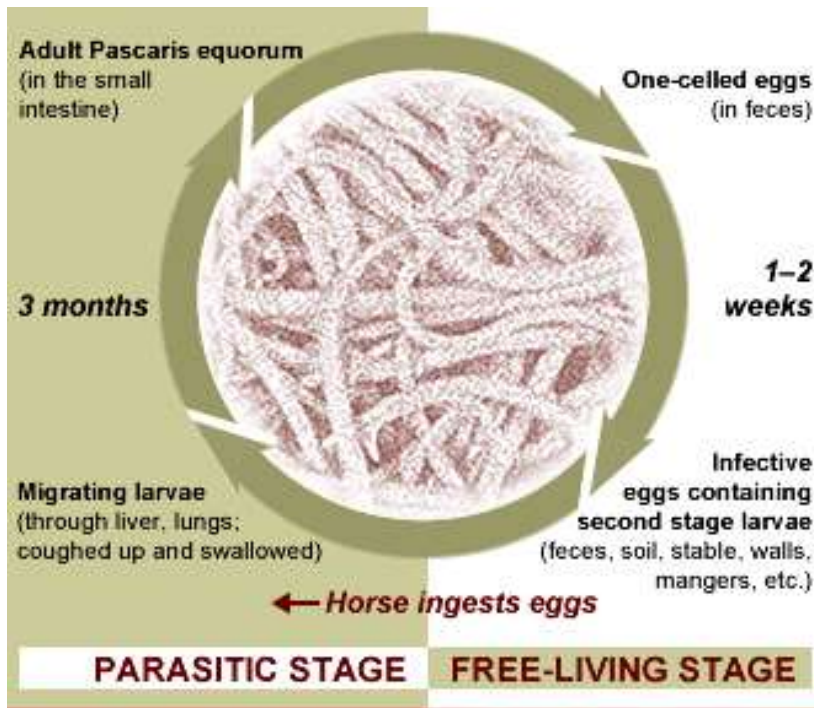
Genus _____ Genus _____

Definition: _____

2. Morphological features of nematodes and their eggs:



- 1 - _____
- 2 - _____
- 3 - _____
- 4 - _____
- 5 - _____

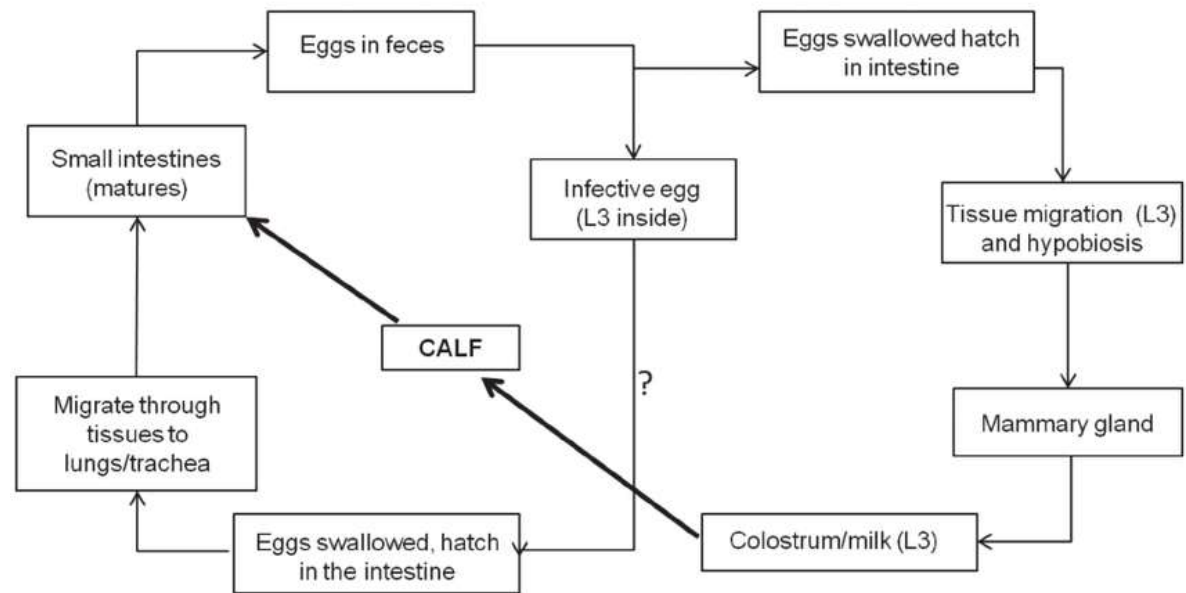


Life cycle of *Parascaris equorum*

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

CALF

COW



Life cycle of *Neoscaris vitulorum*

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:

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 <u><i>Ascaridiidae</i></u>	Family <u><i>Anisakidae</i></u>
Genus <u><i>Ascaridia</i></u>	Genus <u><i>Anisakis</i></u> Genus <u><i>Pseudoterranova</i></u>

Definition: _____

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

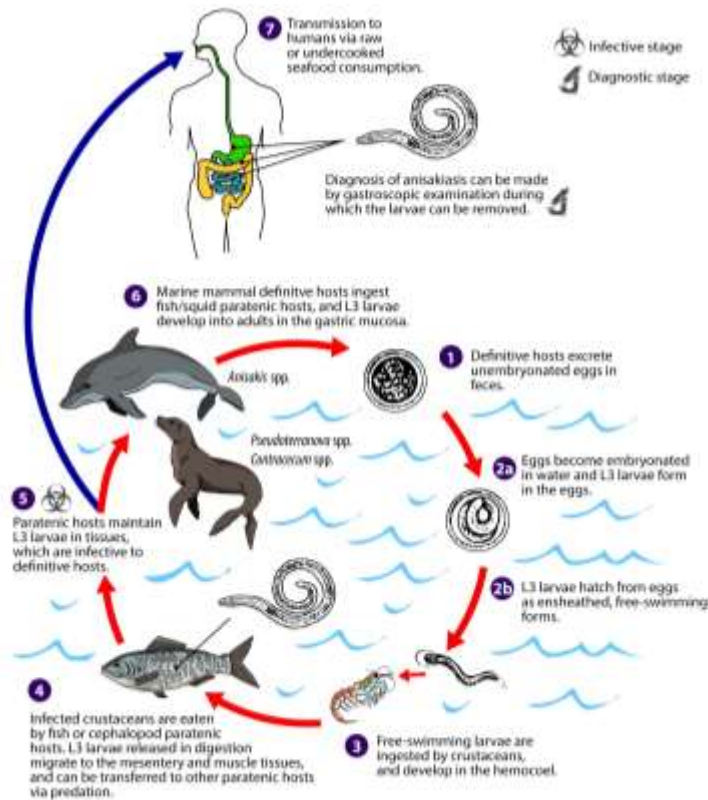


- 1 - _____
- 2 - _____
- 3 - _____
- 4 - _____
- 5 - _____
- 6 - _____

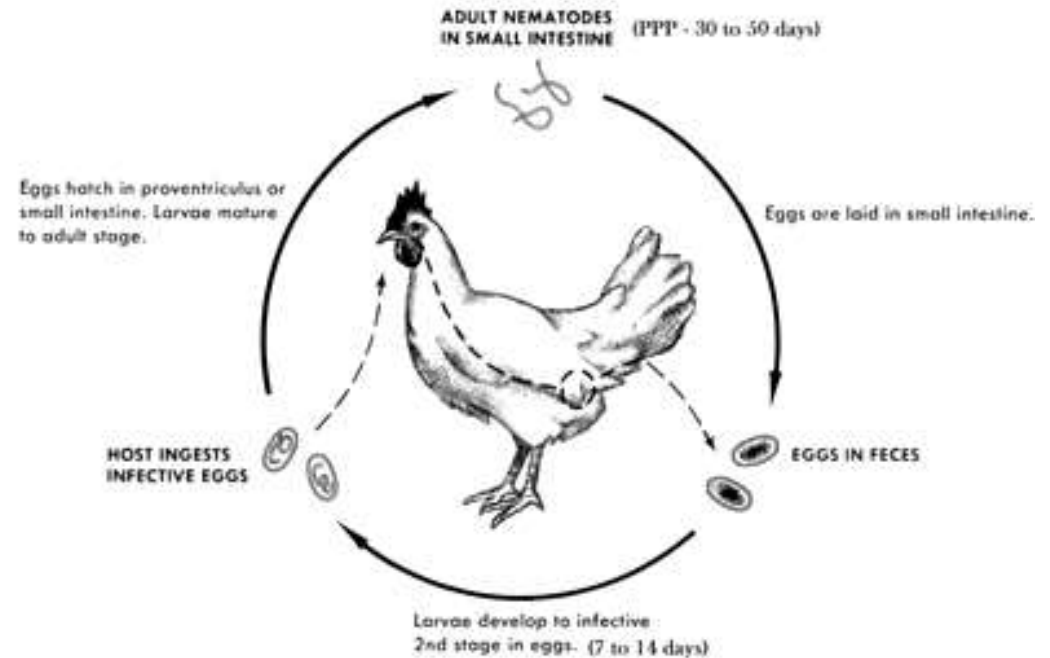
4

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.

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

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: 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 _____

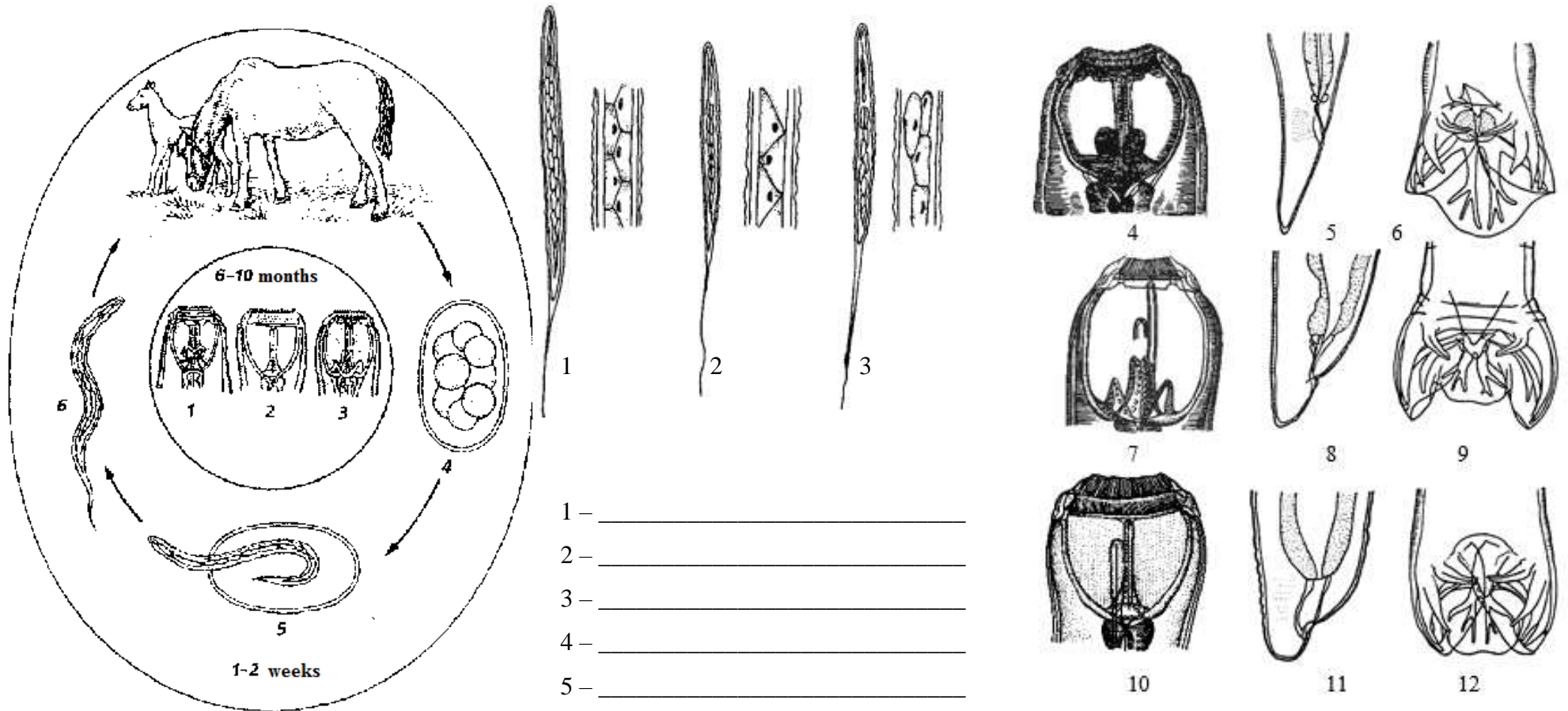
Genus _____

Genus _____

Suborder _____

Definition: _____

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.

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.

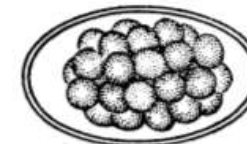
Task performance:

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

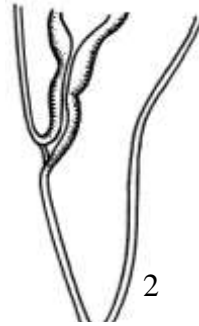
Phylum _____ Order _____ Class _____ Suborder _____
 Family _____ Family _____ Family _____ Family _____
 Genus _____ Genus _____ Genus _____ Genus _____
 Genus _____

Definition: _____

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



- 1 - _____
- 2 - _____
- 3 - _____
- 4 - _____
- 5 - _____



5

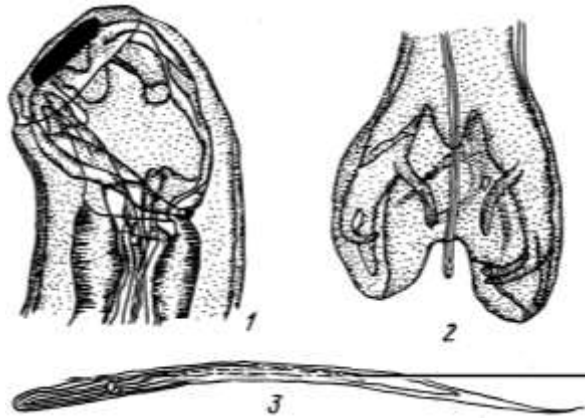


1

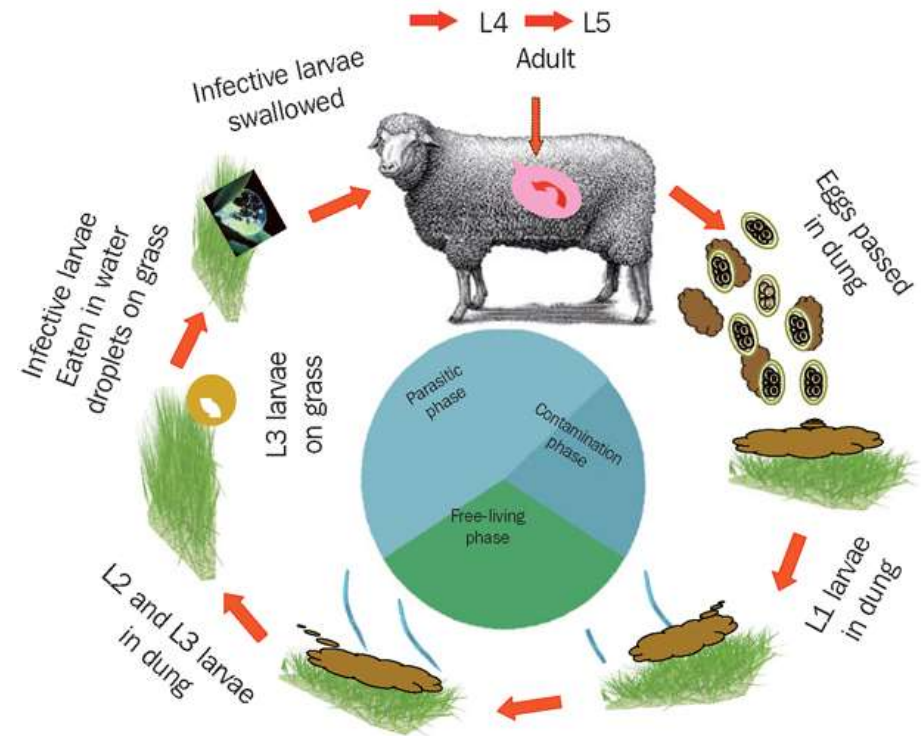
2

3

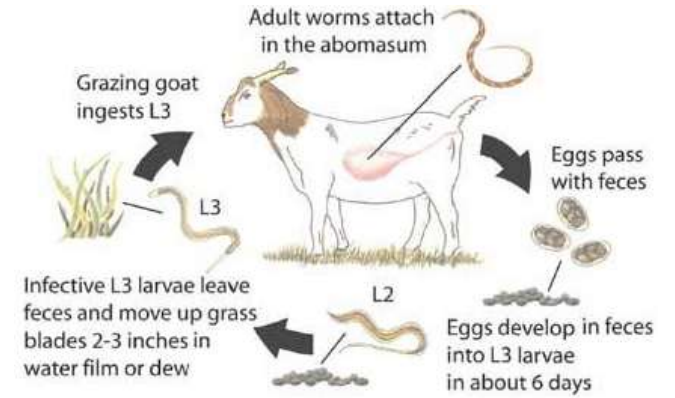
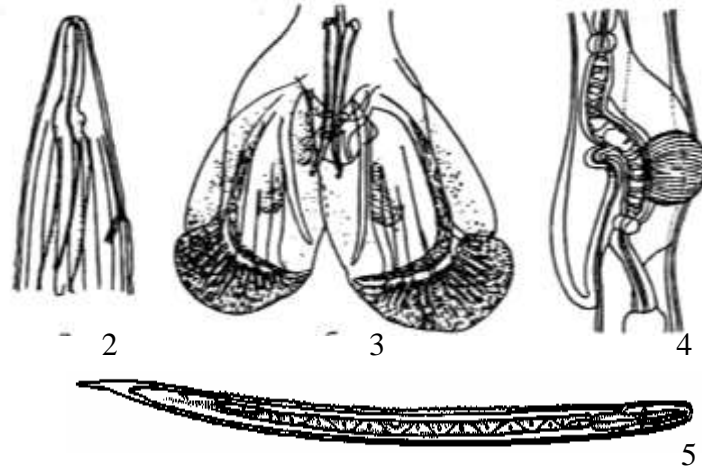
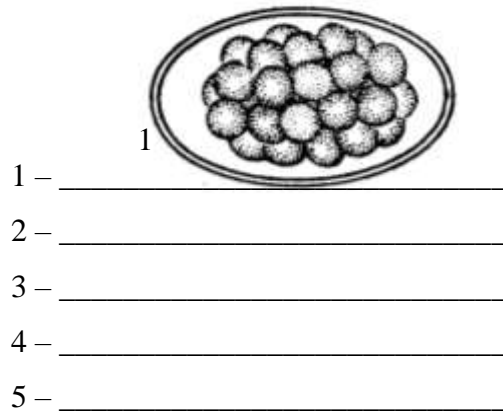
4



- 1 - _____
- 2 - _____
- 3 - _____

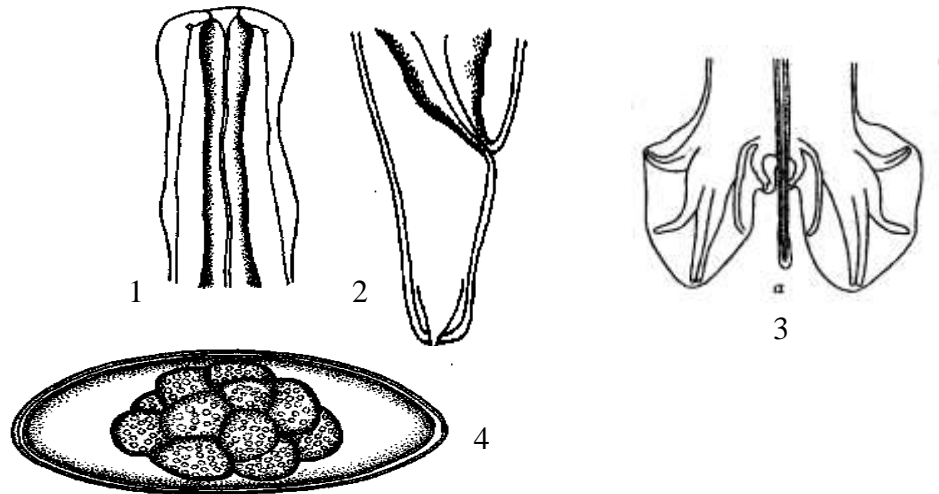


The general life cycle of gastrointestinal (GI) nematodes.
 (<https://www.vettimes.co.uk/archives/vt09/VT3904502001F001.jpg>)

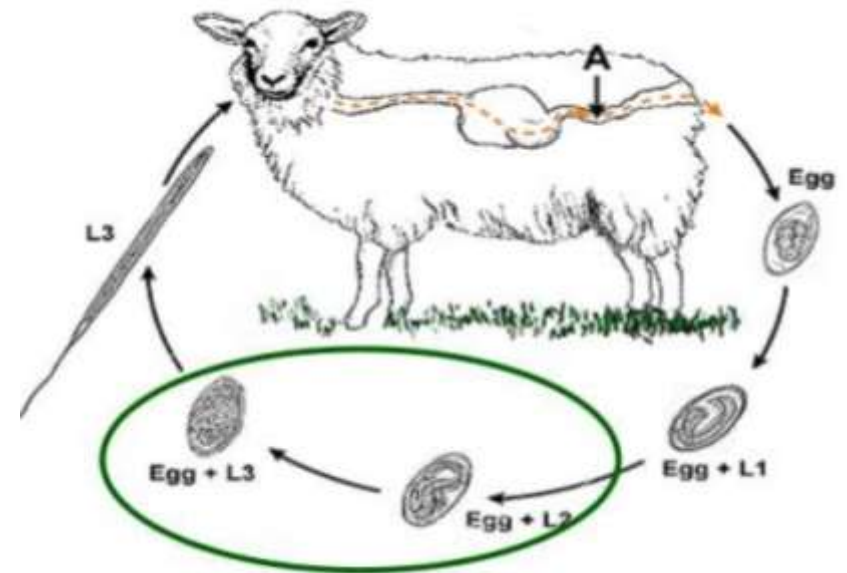


Life cycle of *Haemonchus contortus*

(https://www.researchgate.net/figure/Life-cycle-of-Haemonchus-contortus-Courtesy-pinterestcom_fig1_328019525)



1 - _____ 3 - _____
 2 - _____ 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-b8zOjnAhWRtyoKHavRAwgQBxOECAEQKA&biw=1349&bih=654#imgre=HBQDWgA9W4RP9M&imgdii=2qqM1iixtibIKM>)

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

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

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 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:

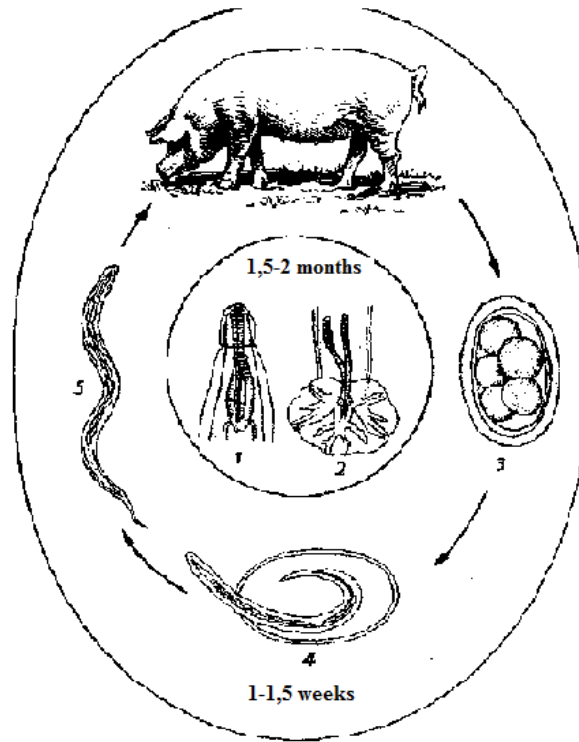
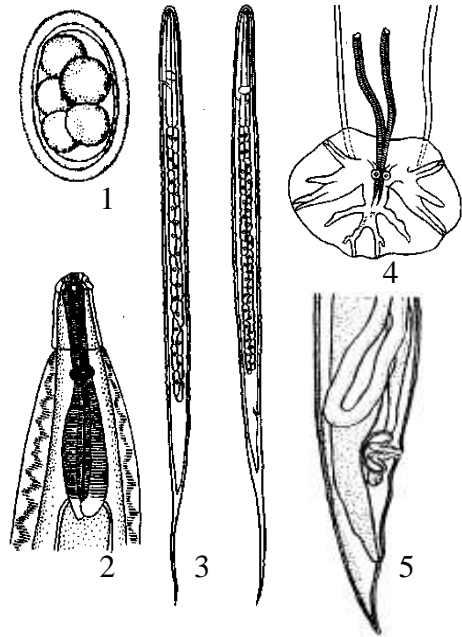
1. The place of pathogens of animals’ strongylatoses in the world animals system (classification):

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

Definition: _____

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

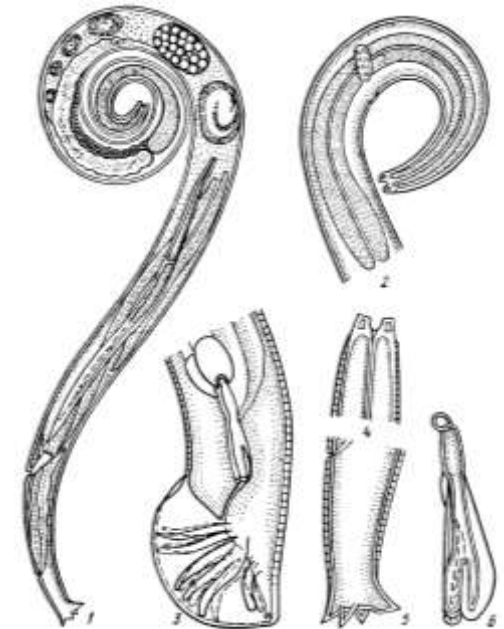
Oesophagostomum dentatum



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

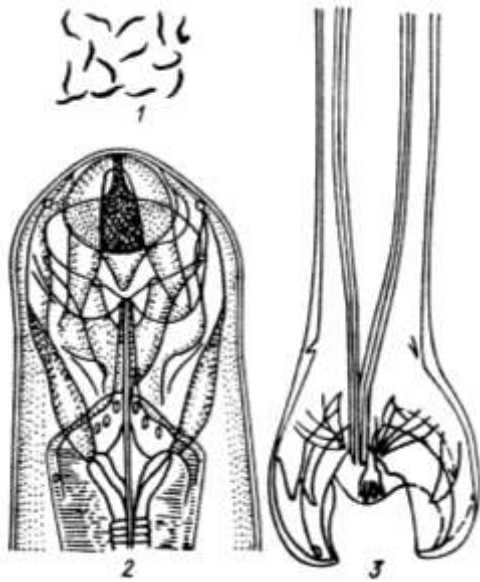


- 1 – _____
- 2 – _____
- 3 – _____
- 4 – _____
- 5 – _____

- 1 – _____
- 2 – _____
- 3 – _____
- 4 – _____
- 5 – _____
- 6 – _____

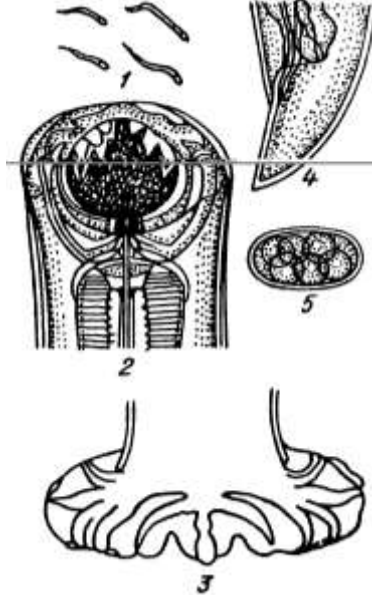
Definition: _____

Uncinaria stenocephala



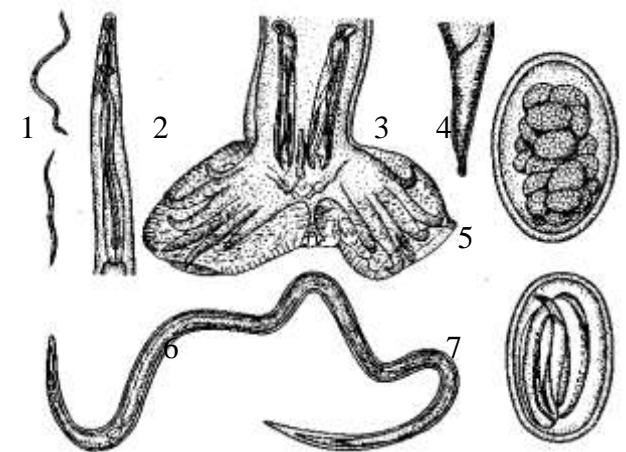
- 1 – _____
- 2 – _____
- 3 – _____

Ancylostoma caninum

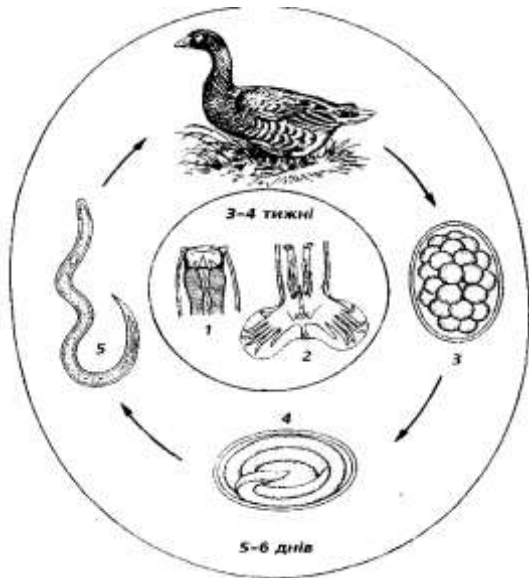


- 1 – _____
- 2 – _____
- 3 – _____
- 4 – _____
- 5 – _____

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:

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

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 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). 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’ strongylatoses in the world animals system (classification):

Phylum _____ Class _____ Order _____ Suborder _____

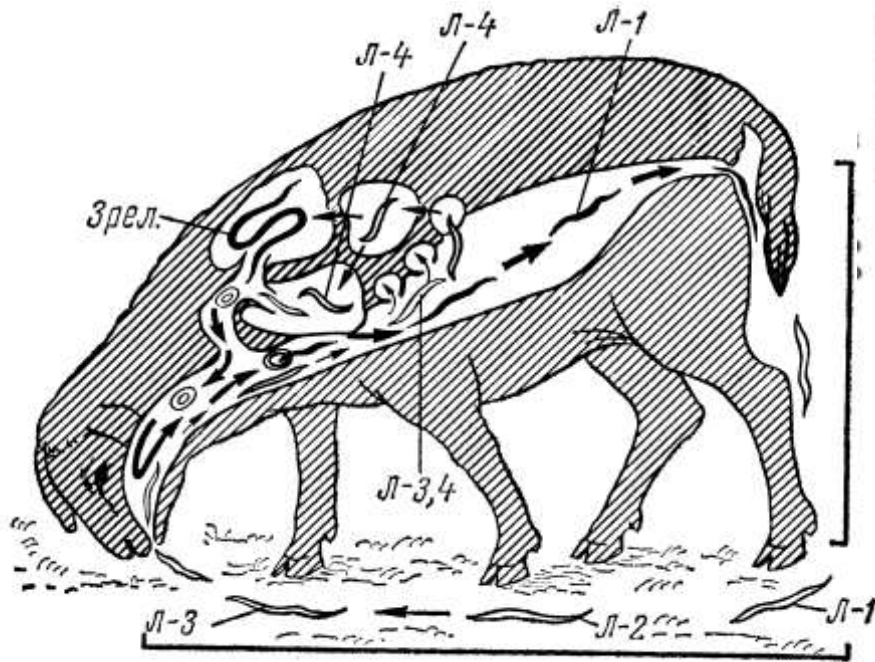
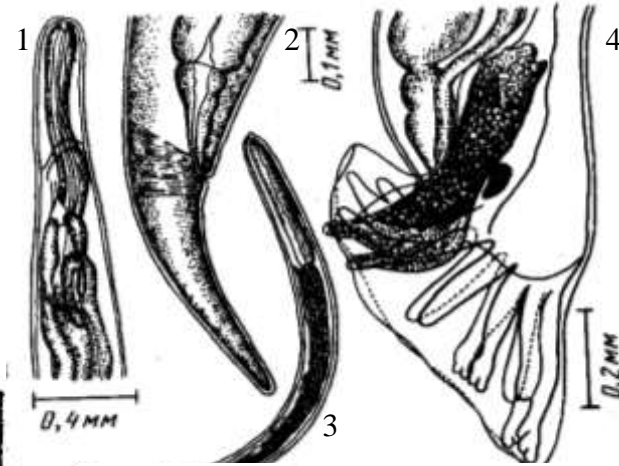
Family _____ Genus _____ Family _____ Genus _____

Definition: _____

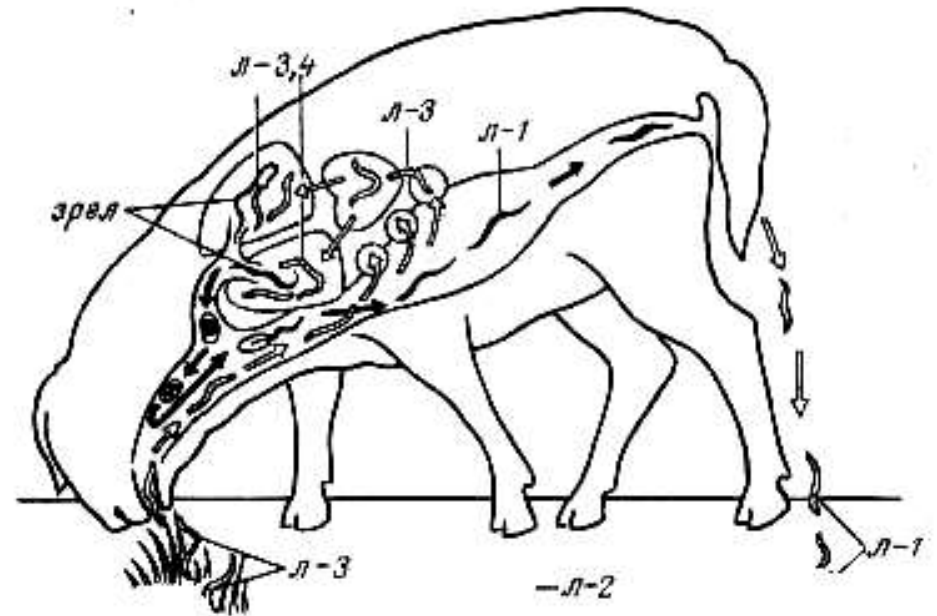
2. Morphological features of main species of respiratory tract strongylatoses in ruminants:

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:

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

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 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 _____

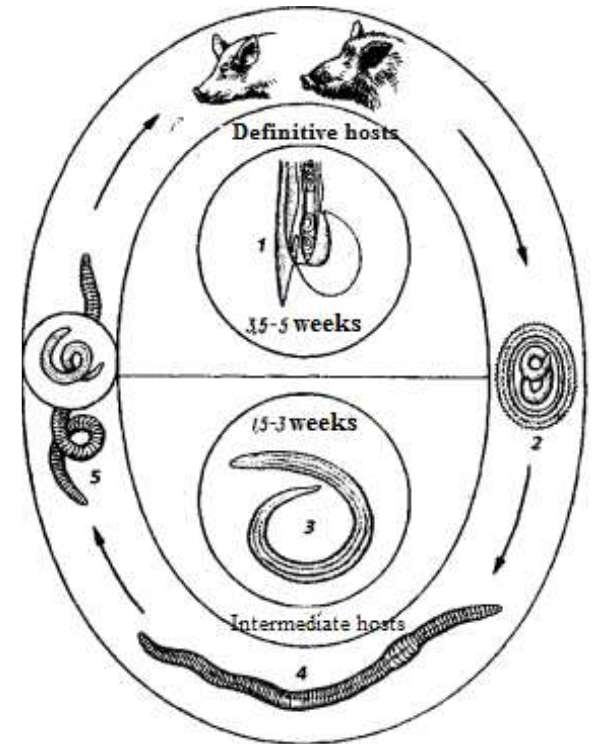
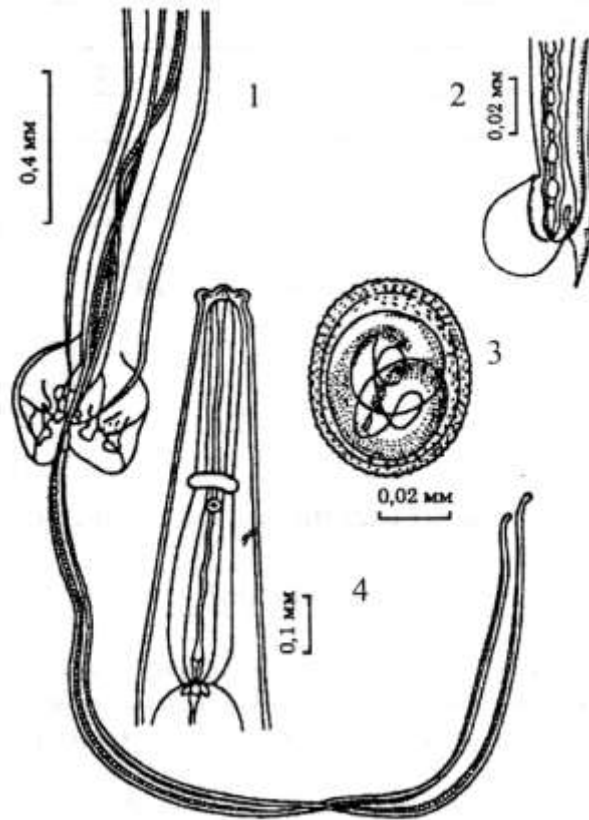
Family _____ Family _____

Genus _____ Genus _____

Definition: _____

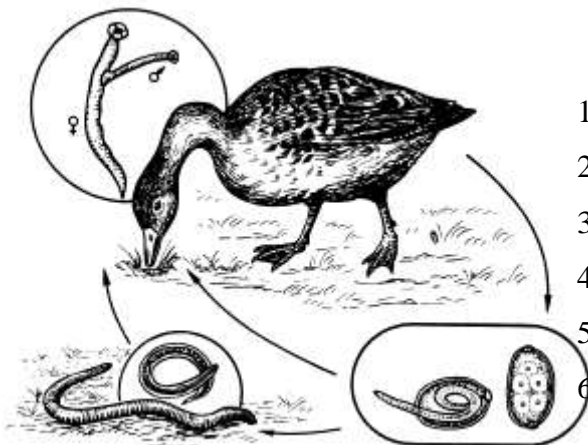
2. Morphological characteristics of pathogens of metastrongylosis of pigs and syngamosis of poultry:

- 1 – _____
- 2 – _____
- 3 – _____
- 4 – _____



Life cycle of *Metastrongylus* spp:

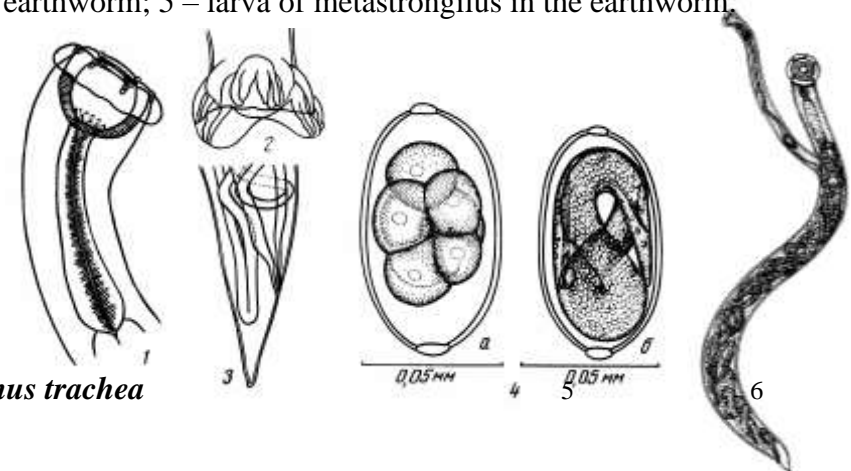
1 – tail of female; 2 – egg; 3 – invasive larva; 4 – earthworm; 5 – larva of metastrongilus in the earthworm.



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:

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

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: Characteristics of nematodes of suborder *Trichurata*. Diagnostics and differential diagnosis of animals' trichuroses and trichinelosis.

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

Purpose of the lesson: To study the morphological and biological characteristics of pathogens from suborder *Trichurata*: pigs (*Trichuris suis*), ruminant (*T. ovis*, *T. skrjabini*), carnivorous (*T. canis*, *T. vulpis*), trichinelosis of animals (*Trichinella spiralis*, *T. pseudospiralis*). 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 micro preparations, 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 «Parasitology and invasive diseases of animals» at the «Portal of educational information resources of MOODLE».

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 (macro preparations), temporary and permanent micro preparations. 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):

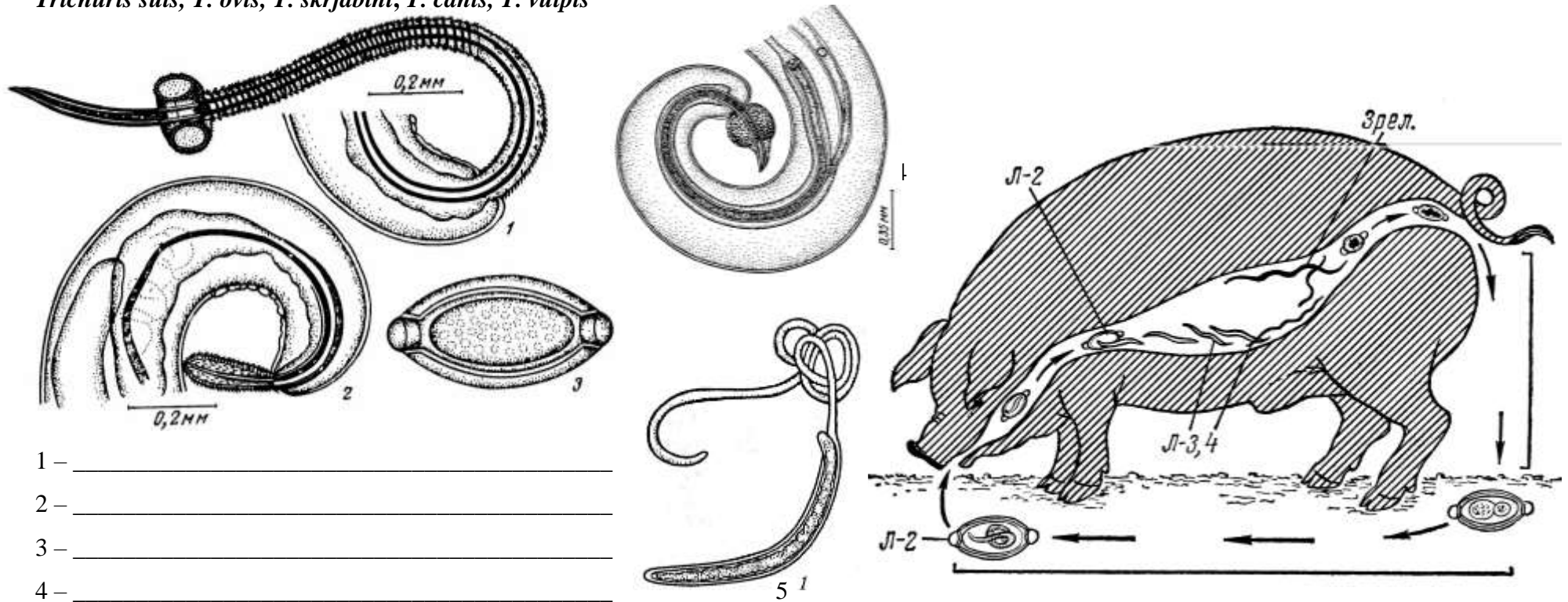
Phylum _____ Class _____ Order _____ Suborder _____

Family _____ Family _____

Genus _____ Genus _____

Definition: _____

2. Morphological characteristics of pathogens of pigs, ruminant and carnivorous.
Trichuris suis, *T. ovis*, *T. skrjabini*, *T. canis*, *T. vulpis*



- 1 – _____
- 2 – _____
- 3 – _____
- 4 – _____
- 5 – _____

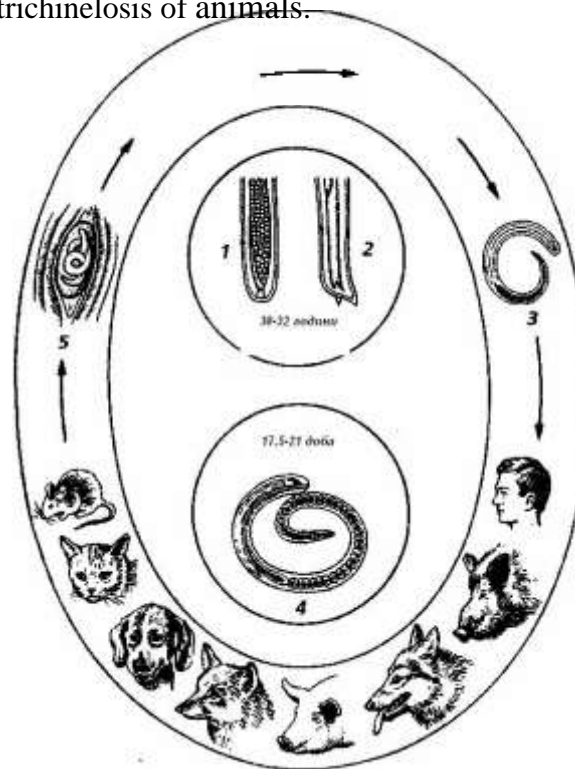
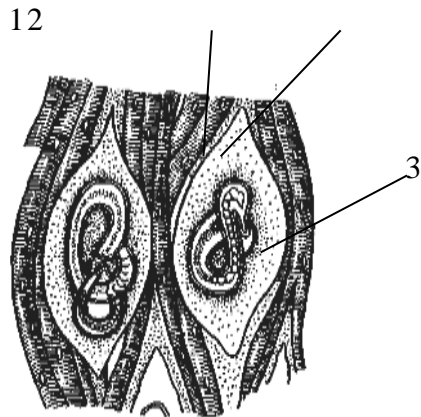
Life cycle of Trichuris of pigs

Definition: _____

3. Morphological characteristics of pathogens of trichinelosis of animals.

Trichinella – larval stage

- 1 – _____
- 2 – _____
- 3 – _____



Trichinella

- a – _____
- b – _____
- B – _____

Life cycle of *Trichinella*:

- 1 – tail of female; 2 – tail of male;
- 3 – larva I stage; 4 – invasive larva; 5 – larva in capsules in muscles.

4. Sources and ways of invasion of animals by trichuroses and trichinelosis of animals:

5. Features of life-time and post-mortem diagnostics, differential diagnosis of trichuroses and trichinelosis of animals:

Clinical signs _____

Pathoanatomical changes _____

Special laboratory diagnostics _____

6. Measures of control and ways of prevention of trichuroses and trichinelosis. 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 p.** **Signatures: Student** _____ **Lecturer** _____

TOPIC: Characteristics of nematodes of suborder *Spirurata*. Diagnostics and differential diagnosis of thelaziosis of cattle and spiruratoses of poultry (tetramerosis, streptocarosis, echinuriosis).

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 *Spirurata* – thelaziosis of cattle (*Thelaziia rhodesi*, *Th. gulosa*, *Th. skrjabini*) and spiruratoses of poultry (tetramerosis (*Tetrameres fissispina*), streptocarosis (*Streptocara crassicauda*), echinuriosis (*Echinuria uncinata*). 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 «Portal of educational information resources of Kharkiv State ZooVeterinary Academy! (MOODLE)».

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 _____ Class _____ Order _____ Suborder _____

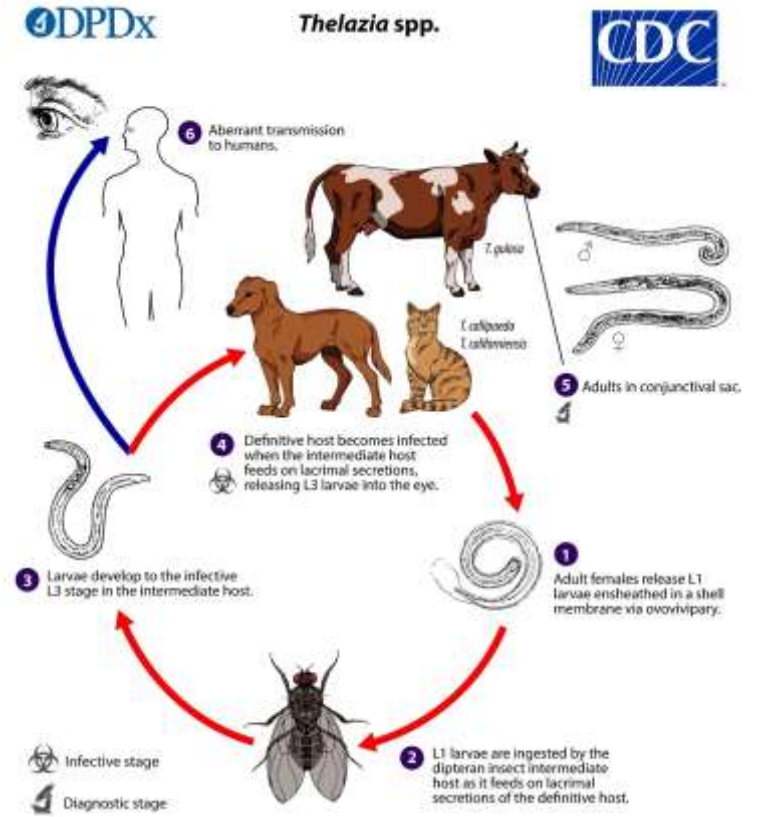
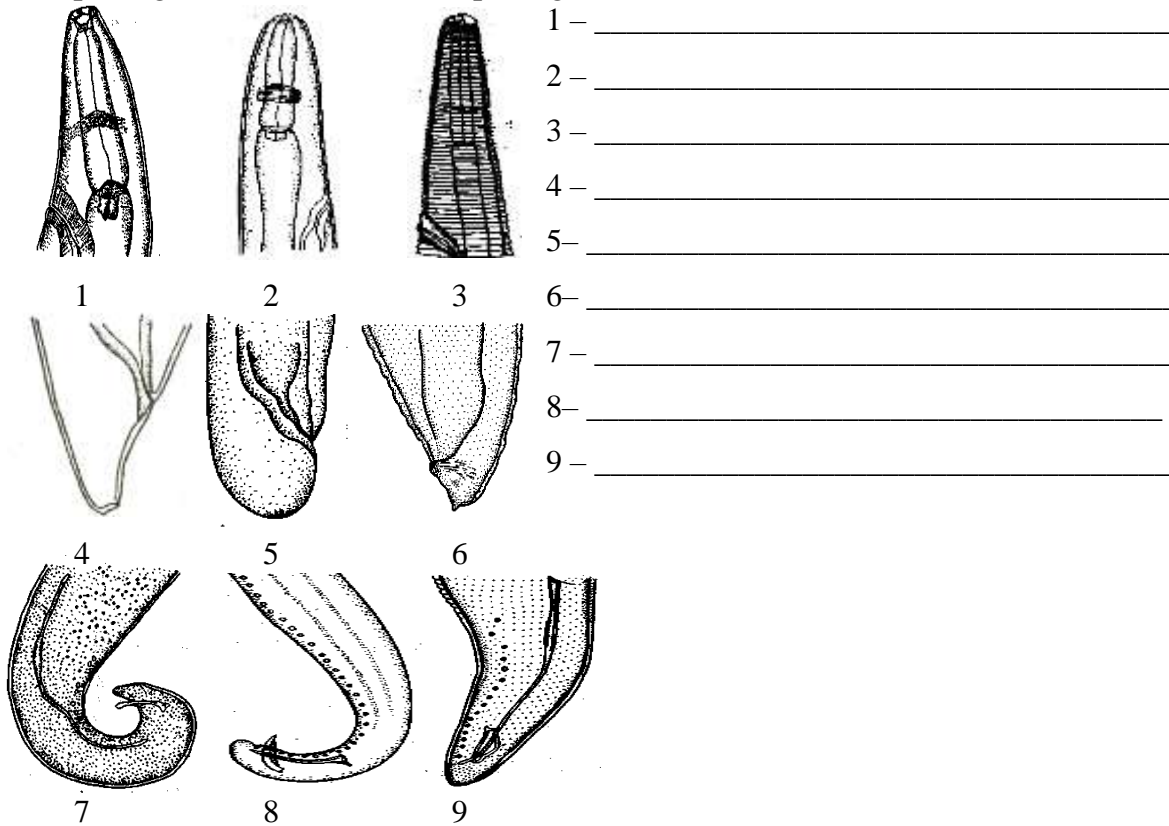
Family _____ Family _____ Family _____

Genus _____ Genus _____ Genus _____

Genus _____

Definition: _____

2. Morphological characteristics of pathogens of thelaziosis of cattle:

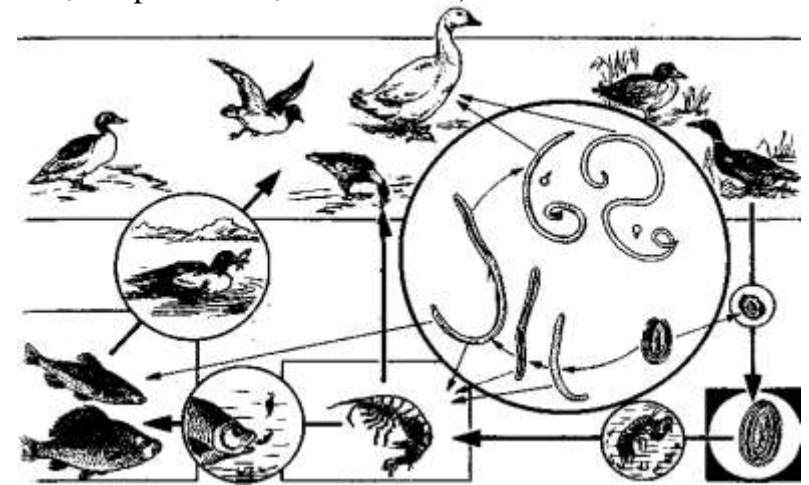
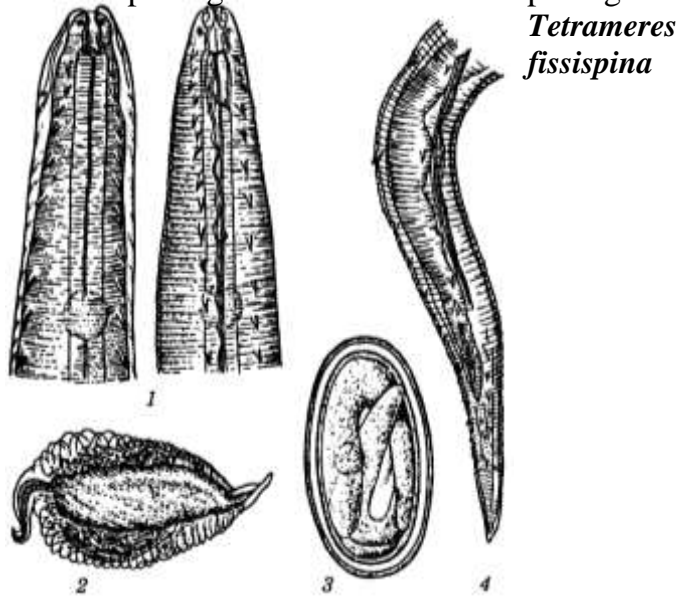


Life cycle of Thelazias

(<https://www.cdc.gov/dpdx/thelaziasis/index.html>)

Definition: _____

3. Morphological characteristics of pathogens of spiruratoses of poultry (tetramerosis, streptocarosis, echinuriosis):



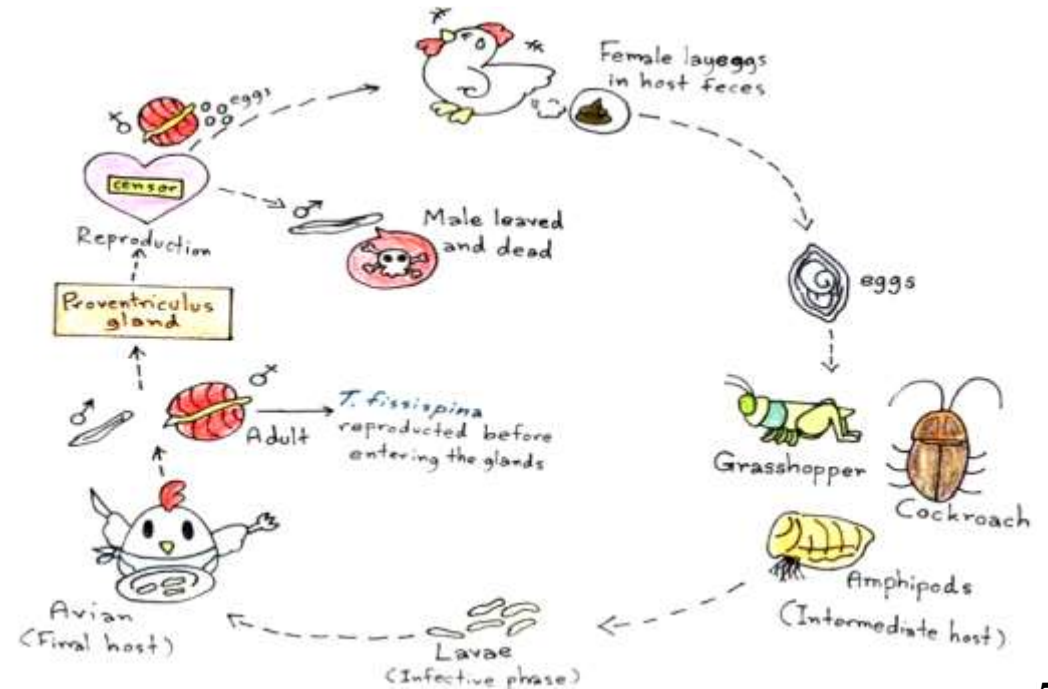
Life cycle *Streptocara crassicauda*:

1 – definitive host; 2 – egg; 3 – larva I stage; 4 – larva II stage; 5 – larva III stage; 6 – intermediate host; 7 – reservoir host.

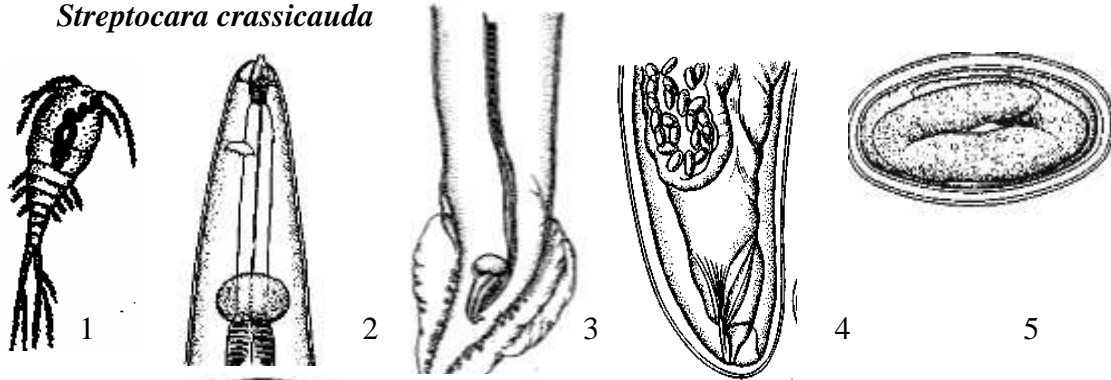
- 1 – _____
- 2 – _____
- 3 – _____
- 4 – _____

Life cycle *Tetrameres fissispina*

(<https://vet.kku.ac.th/pathology/somboon/Nemat-Horse-Poultry/TetrameresPPT.pdf>):

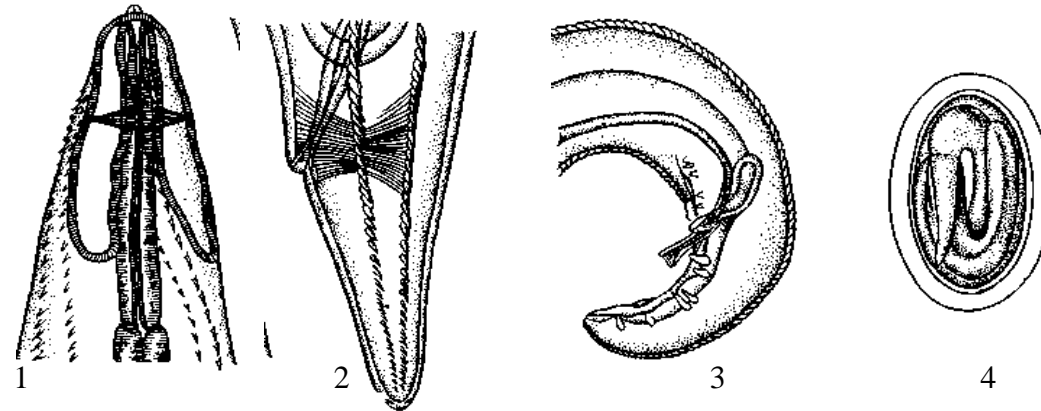
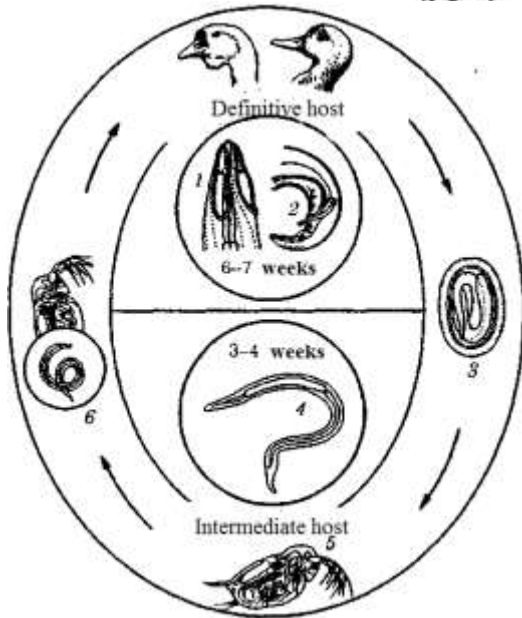


Streptocara crassicauda



- 1 – _____
- 2 – _____
- 3 – _____
- 4 – _____
- 5 – _____

Echinuria uncinata



- 1 – _____
- 2 – _____
- 3 – _____
- 4 – _____

Life cycle *Echinuria uncinata*:

1 – head of Echinuria, 2 – tail of male; 3 – egg;
 4 – invasive larva; 5 – daphnia; 6 – larva of parasite in the daphnia's body.

4. Sources and ways of invasion of animals by thelaziosis, spiruratoses of poultry (tetramerosis, streptocarosis, echinuriosis):

5. Features of life-time and post-mortem diagnostics, differential diagnosis of thelaziosis of cattle and spiruratoses of poultry (tetramerosis, streptocarosis, echinuriosis):

Clinical signs _____

Pathoanatomical changes _____

Special laboratory diagnostics _____

6. 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 faces from them. Samples of drugs.

« ___ » _____ **20 p.** **Signatures: Student** _____ **Lecturer** _____

TOPIC: Characteristics of nematodes of suborder *Filariata*. Diagnostics and differential diagnosis of onchocercoses and setarioses of ruminants and horses, parafilariosis of horses, dirofilariosis of carnivorous

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

Purpose of the lesson: To study the morphological and biological characteristics of pathogens of nematodes of onchocercoses and setarioses of ruminants and horses (*Onchocerca gutturosa*, *O. lienalis*, *O. cervicalis*, *O. reticulata*, *Setaria labiatopapillosa*, *S. cervi*, *S. digitata*, *S. equina*), parafilariosis of horses(*Parafilaria multipapillosa*), dirofilariosis of carnivorous (*Dirofilaria immitis*, *D. repens*). 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 larval stages of these parasites and draw them.

Task: To study the morphological features of pathogens of these families using macro- and micro preparations, 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 «Parasitology and invasive diseases of animals» at the «Portal of educational information resources of MOODLE».

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 (macro preparations), temporary and permanent micro preparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, and 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 _____ Class _____ Order _____ Suborder _____

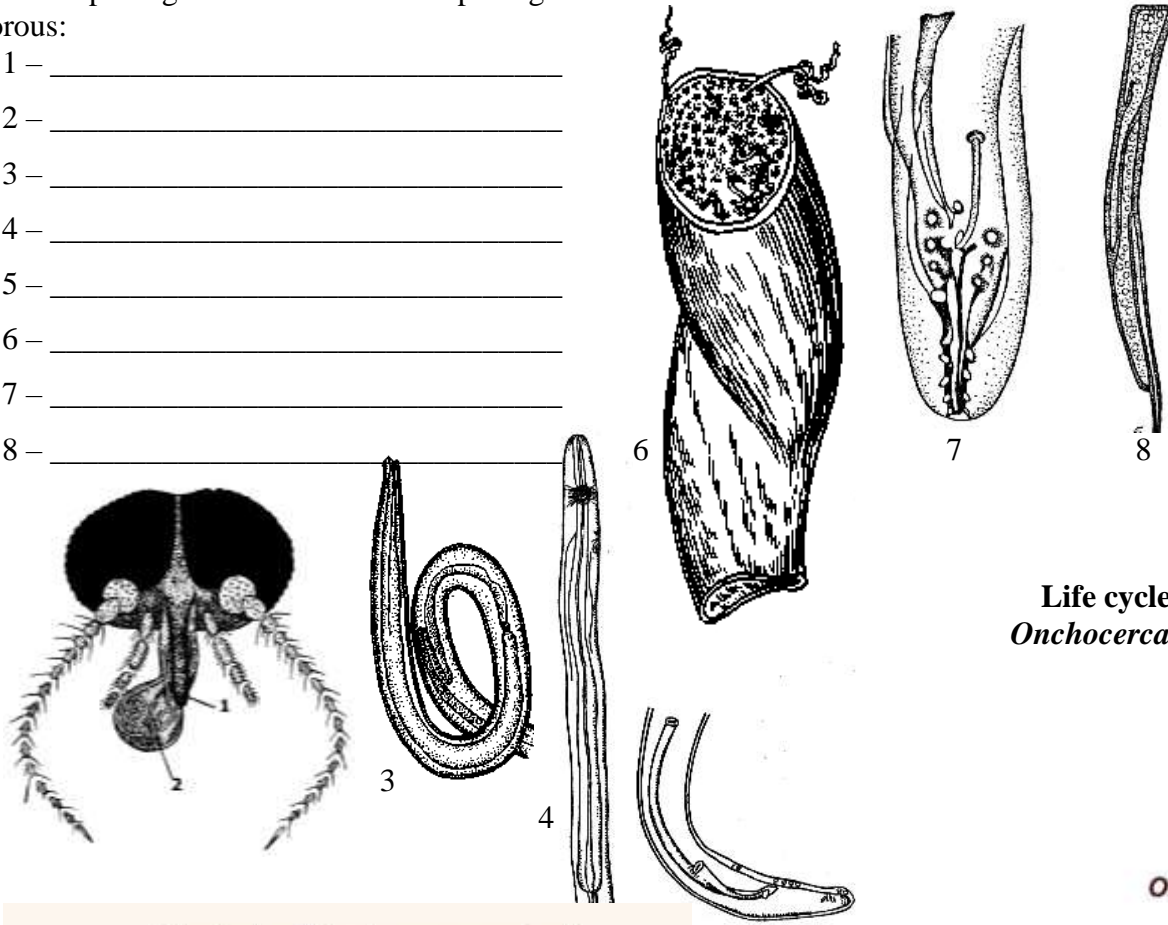
Family _____ Family _____ Family _____

Genus _____ Genus _____ Genus _____ Genus _____

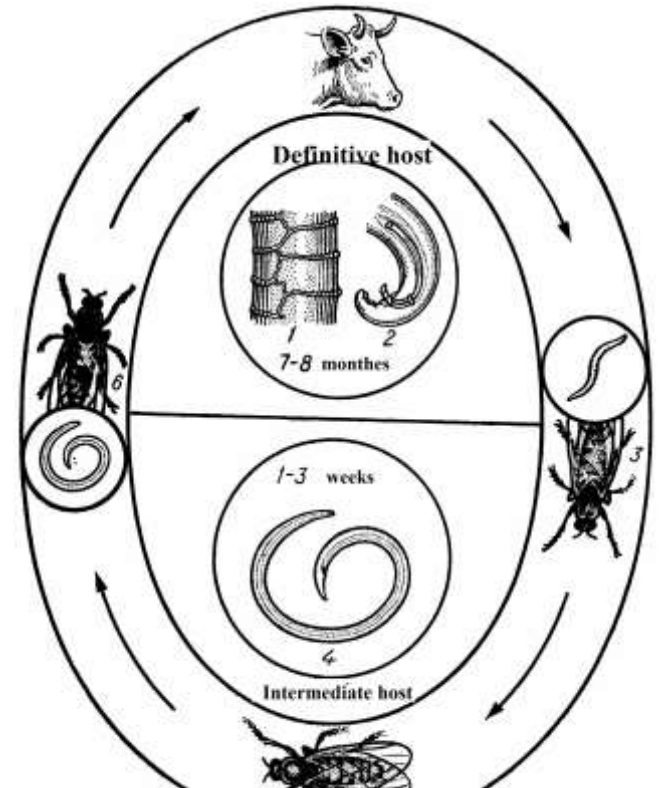
Definition: _____

2. Morphological characteristics of pathogens onchocercoses and setarioses of ruminants and horses, parafilariosis of horses, dirofilariosis of carnivorous:

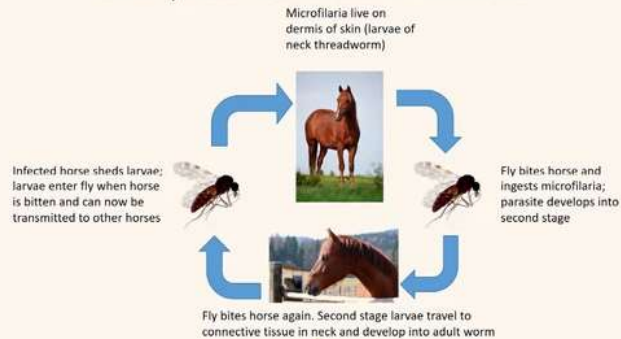
- 1 - _____
- 2 - _____
- 3 - _____
- 4 - _____
- 5 - _____
- 6 - _____
- 7 - _____
- 8 - _____



Life cycle of *Onchocerca* spp

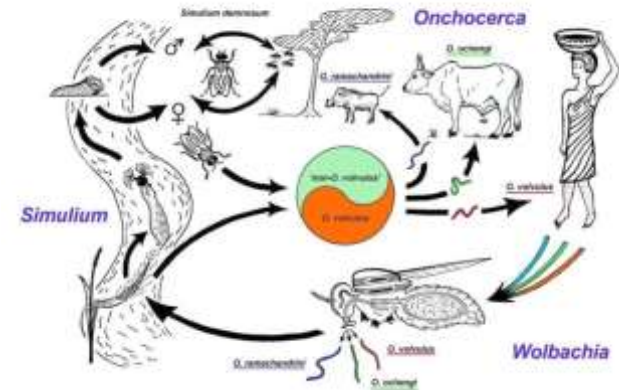


Life Cycle of *Onchocerca cervicalis*

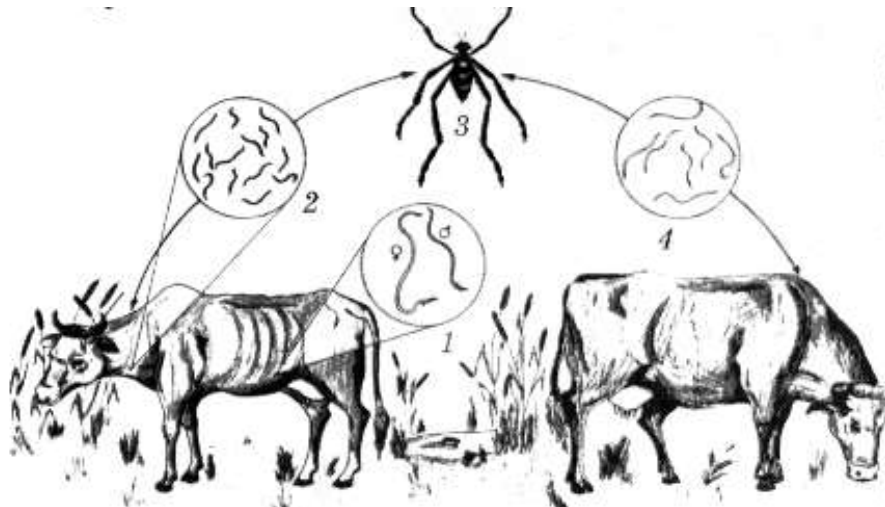


5

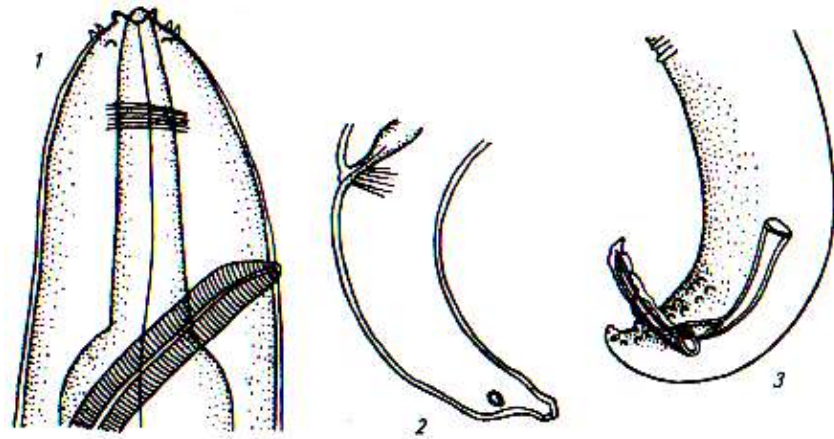
Onchocerca-Simulium Übertragungszyklen



Definition: _____

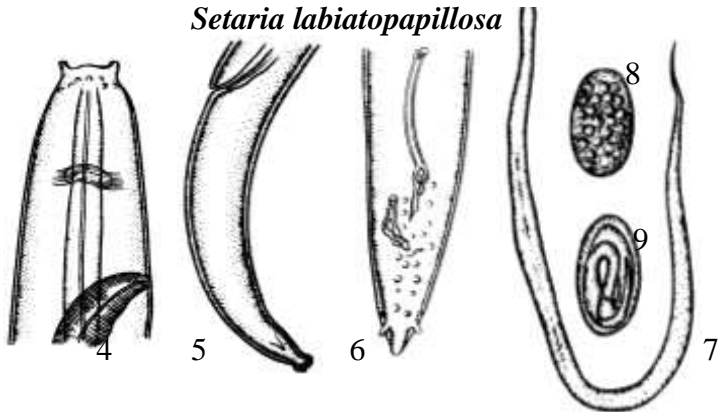


Life cycle *Setaria* spp *Setaria equina*



- 1 - _____
- 2 - _____
- 3 - _____

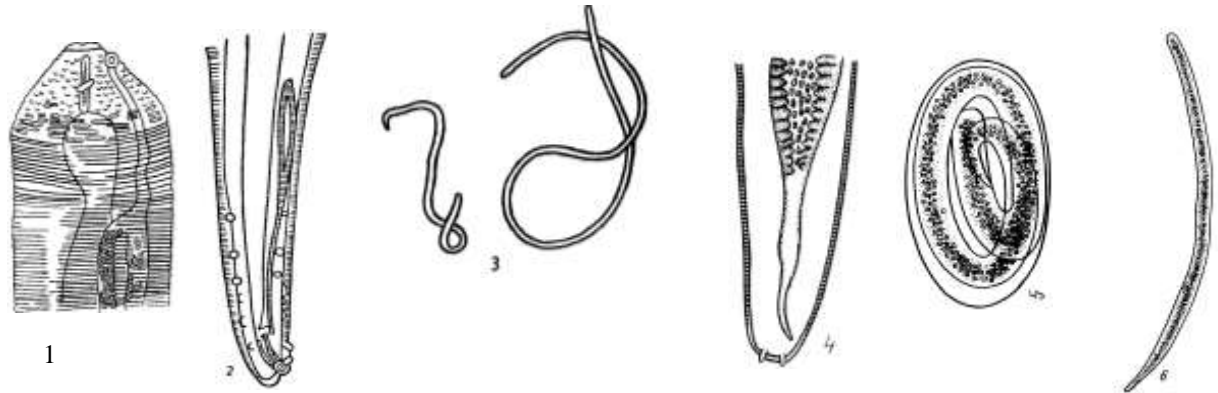
Setaria labiatopapillosa



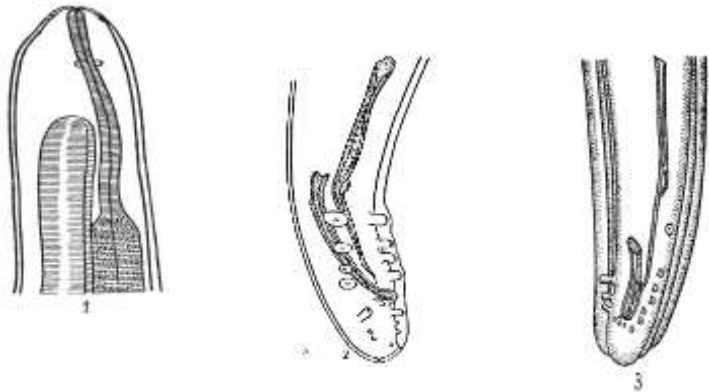
- 4 - _____
- 5 - _____
- 6 - _____
- 7 - _____
- 8 - _____
- 9 - _____

Parafilaria multipapillosa

- 1 - _____
- 2 - _____
- 3 - _____
- 4 - _____
- 5 - _____
- 6 - _____

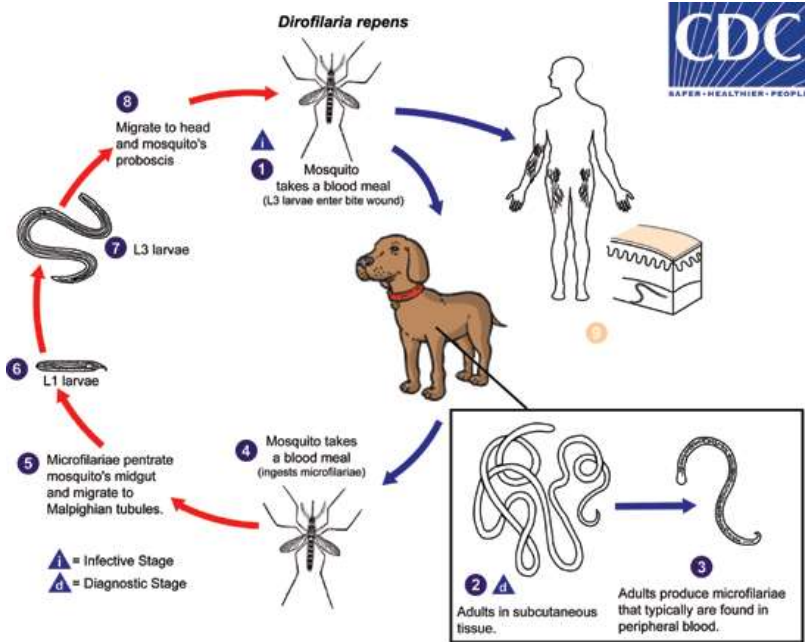


Definition: _____



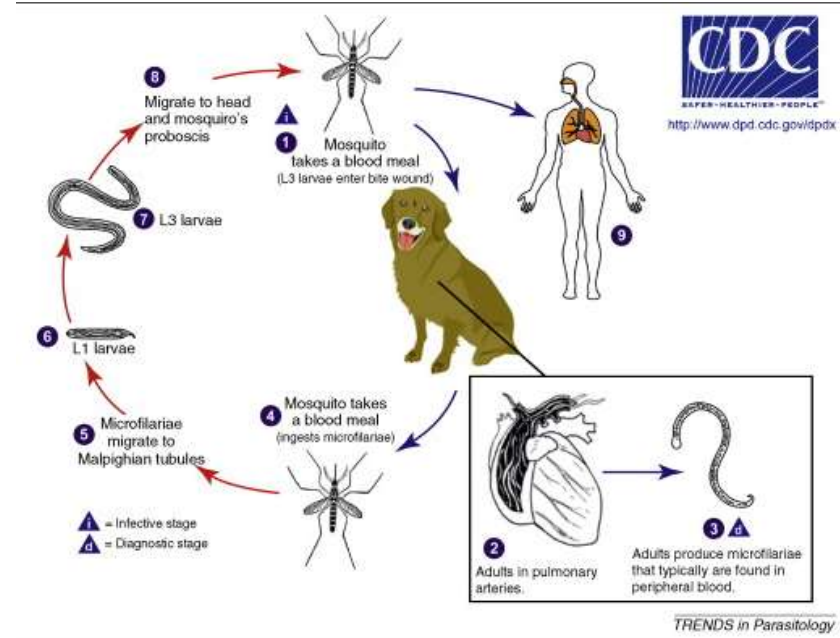
The end parts of the body of imago heartworms

- 1 - _____
- 2 - _____
- 3 - _____



Life cycle of *Dirofilaria repens*

(https://www.cdc.gov/parasites/dirofilariasis/biology_d_repens.html)



Life cycle of *Dirofilaria immitis*

(<https://mtviewvet.net/heartworm-life-cycle-in-dogs-and-humans/>)

Definition: _____

3. Sources and ways of invasion of animals by onchocercoses and setarioses of ruminants and horses, parafilariosis of horses, dirofilariosis of carnivorous: _____

4. Features of life-time and post-mortem diagnostics, differential diagnosis of onchocercoses and setarioses of ruminants and horses, parafilariosis of horses, dirofilariosis of carnivorous:

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 p.** **Signatures: Student** _____ **Lecturer** _____

TOPIC: Characteristics of nematodes of suborder Rhabditata. Diagnostics and differential diagnosis of strongyloidoses of young 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 suborder Rhabditata (*Strongyloides papillosus*, *S. westeri*, *S. ransomi*, *S. vulpis*). 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 micro preparations, 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 «Parasitology and invasive diseases of animals» at the «Portal of educational information resources of MOODLE».

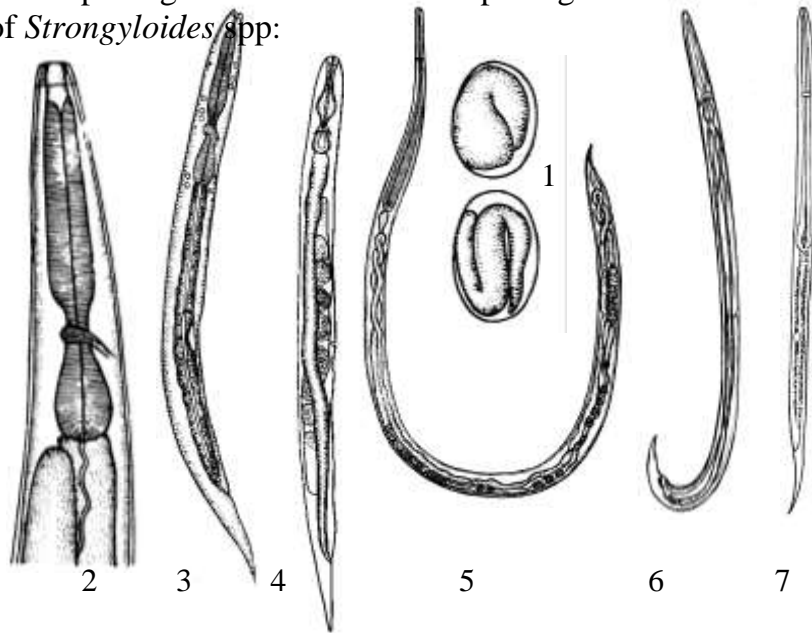
Auditory work. To study and make a drawing or mark in pictures the basic diagnostic features of pathogens of these diseases using the museum material (macro preparations), temporary and permanent micro preparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, and 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 _____	Definition: _____
Class _____	_____
Order _____	_____
Suborder _____	_____
Family _____	_____
Genus _____	_____

2. Morphological characteristics of pathogens of *Strongyloides* spp:



- 1 - _____
- 2 - _____
- 3 - _____
- 4 - _____
- 5 - _____
- 6 - _____
- 7 - _____

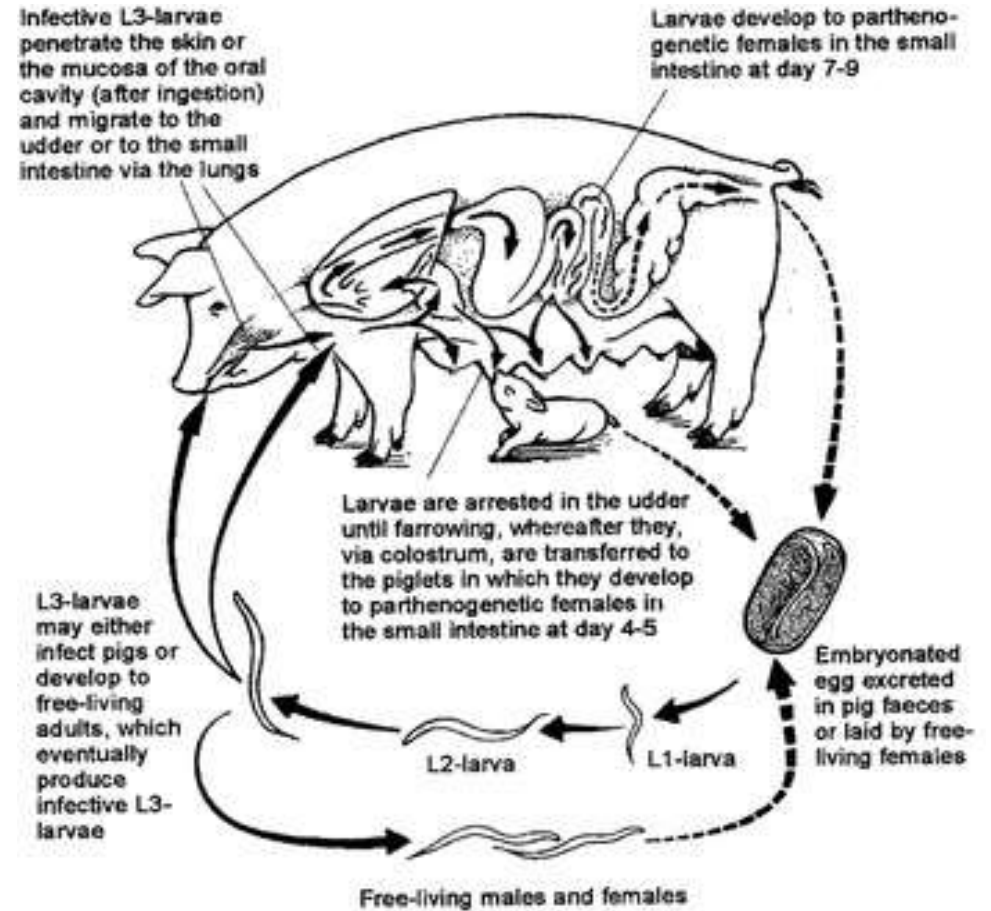


Illustration by Wm P Hamilton CMI

Life cycle *Strongyloides* spp (<https://www.cambridge.org/core/journals/parasitology/article/strongyloides-spp-infections-of-veterinary-importance/0E052A0C75B34441289883C1A4DDBC51/core-reader>):

3. Sources and ways of invasion of animals by strongyloidoses of young animals:

4. Features of life-time and post-mortem diagnostics, differential diagnosis of strongyloidoses of young animals:

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 p.** **Signatures: Student** _____ **Lecturer** _____

TOPIC: General characteristics of helminthes of Acanthocephala class. Diagnostics and differential diagnosis of macracanthorhynchosis of pigs, poultry's polymorphosis and filicollosis.

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

Purpose of the lesson: To study the morphological and biological characteristics of pathogens of Acanthocephala class – macracanthorhynchosis of pigs (*Macracanthorhynchus hirudinaceus*), poultry's polymorphosis (*Polymorphus magnus*, *P. minutus*) and filicollosis (*Filicollis anatis*). 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 micro preparations, 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 Acanthocephalatoses diseases of animals.

Independently prepare for classes using recommended books (1–4), lecture material and electronic files from the discipline «Parasitology and invasive diseases of animals» at the «Portal of educational information resources of MOODLE».

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 (macro preparations), temporary and permanent micro preparations. Carry out clinical and parasitological examination of animals, make a diagnostics and differential diagnosis, and appoint treatment. Get acquainted with the arsenal of medicines recommended for control this group of diseases.

Task performance:

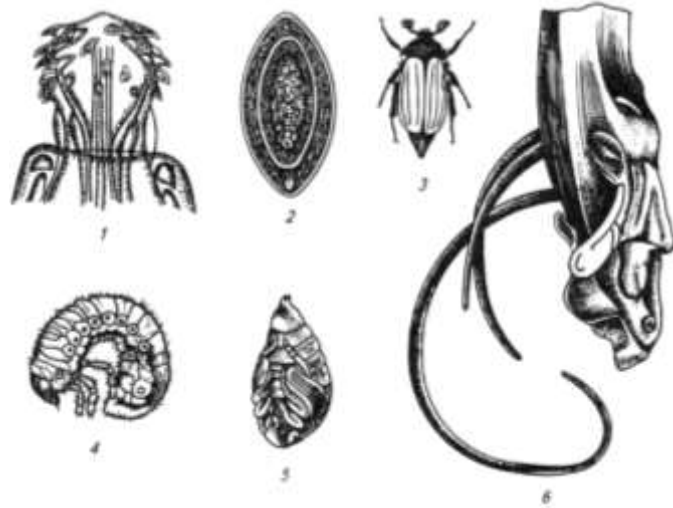
1. The place of pathogens of macracanthorhynchosis in the world animals system (classification):

Phylum _____ Class _____ Order _____

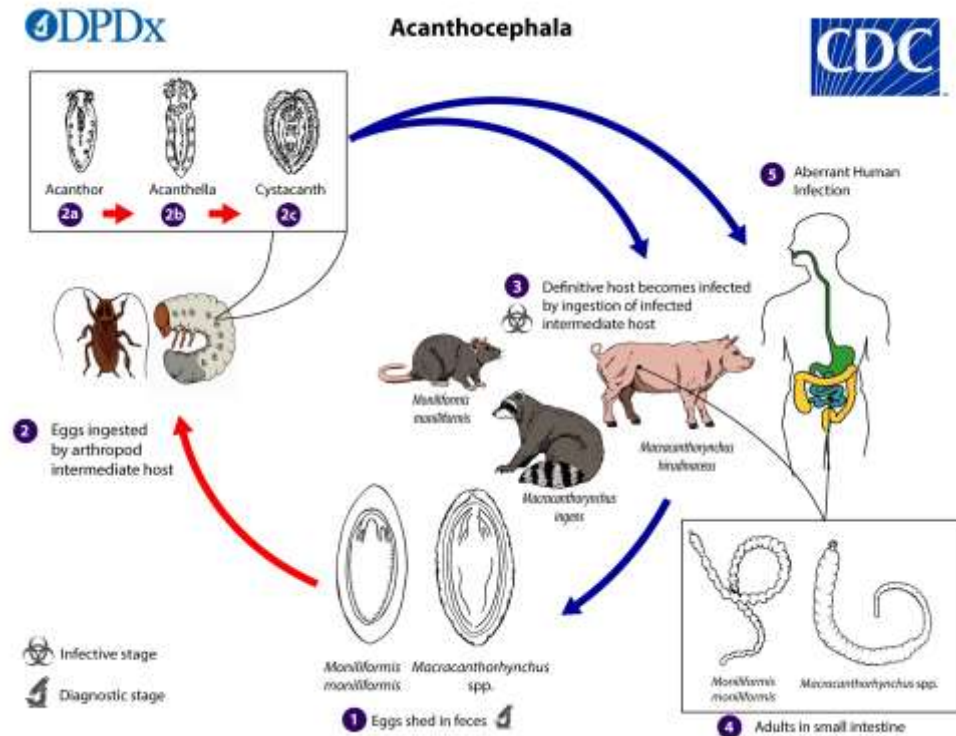
Family _____ Genus _____

Definition: _____

2. Morphological characteristics of pathogens of macracanthorhynchosis of pigs:
Macracanthorhynchus hirudinaceus



- 1 – _____
- 2 – _____
- 3 – _____
- 4 – _____
- 5 – _____
- 6 – _____



Life cycle *Macracanthorhynchus hirudinaceus*

(<https://www.cdc.gov/dpdx/acanthocephaliasis/index.html>)

3. Sources and ways of invasion of animals by *Macracanthorhynchus hirudinaceus*:

4. Features of life-time and post-mortem diagnostics, differential diagnosis of macracanthorhynchosis in pigs:

Clinical signs _____

Pathoanatomical changes _____

Special laboratory diagnostics _____

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

Treatment _____

Prevention _____

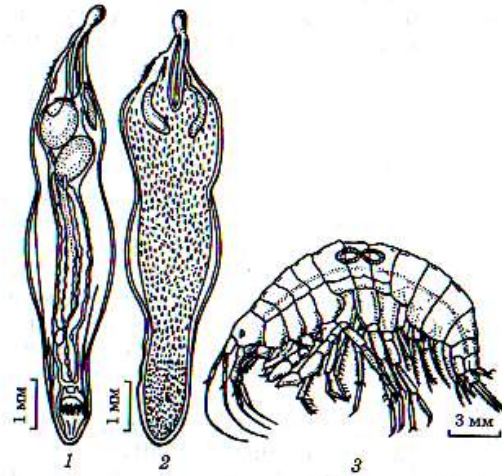
6. The place of pathogens of *Polymorphosis and Filicollosis* in the world animals system (classification):

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

Definition: _____

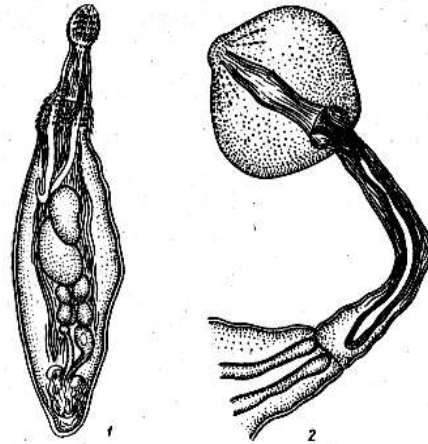
7. Morphological characteristics of pathogens of Acanthocephaloses of poultry:

Polymorphus magnus



- 1 - _____
- 2 - _____
- 3 - _____

Filicollis anatis

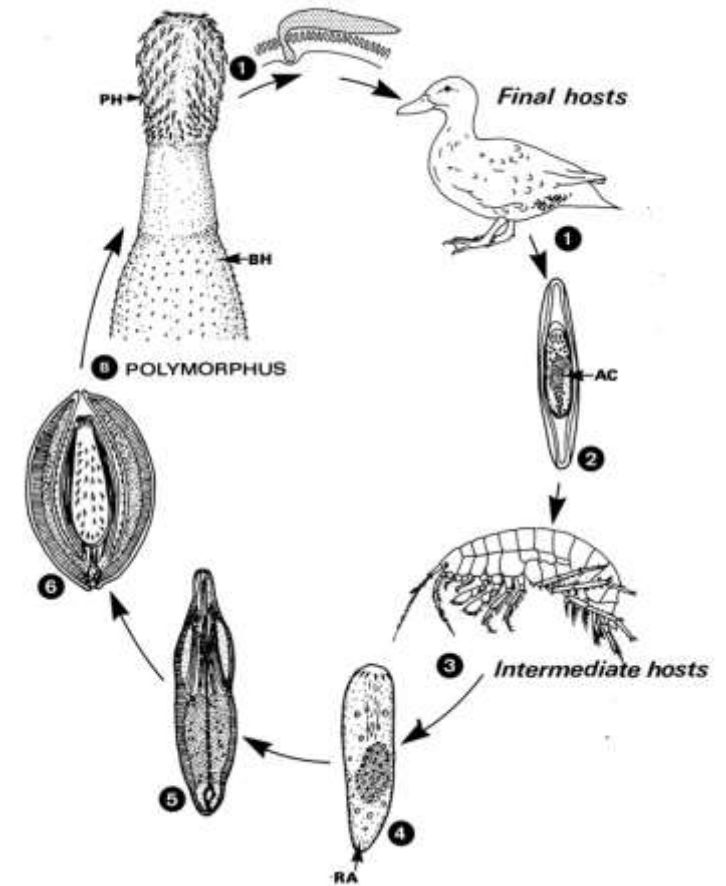


- 1 - _____
- 2 - _____

8. Sources and ways of invasion of animals by polymorphosis and filicollis:

Life cycle of *F. anatis*

(https://link.springer.com/referenceworkentry/10.1007%2F3-540-29834-7_8)



9. Features of life-time and post-mortem diagnostics, differential diagnosis of differential diagnostics Acanthocephaloses in poultry:

Clinical signs _____

Pathoanatomical changes _____

Special laboratory diagnostics _____

10. 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 p.** **Signatures: Student** _____ **Lecturer** _____