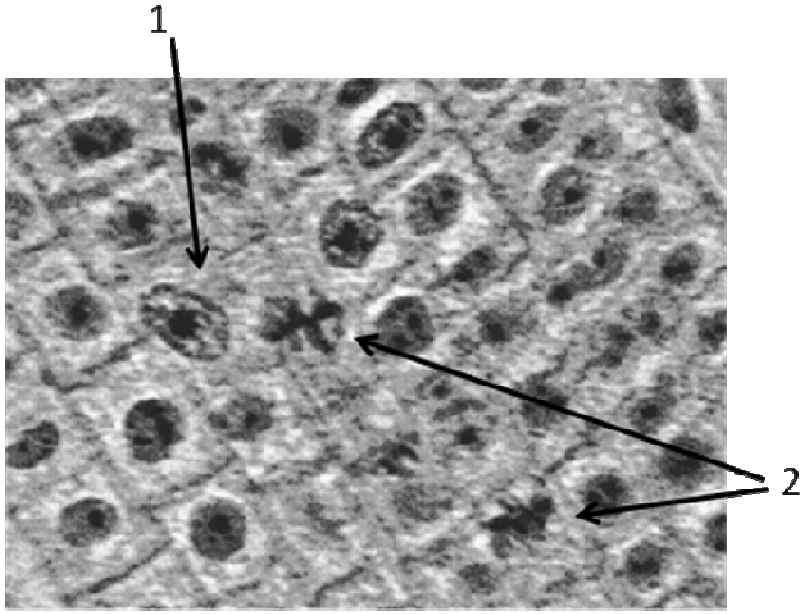
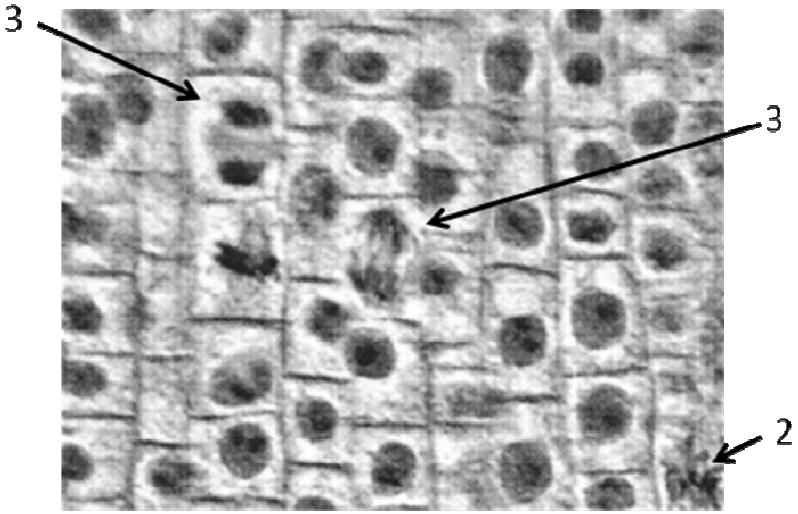
List of exam microslides

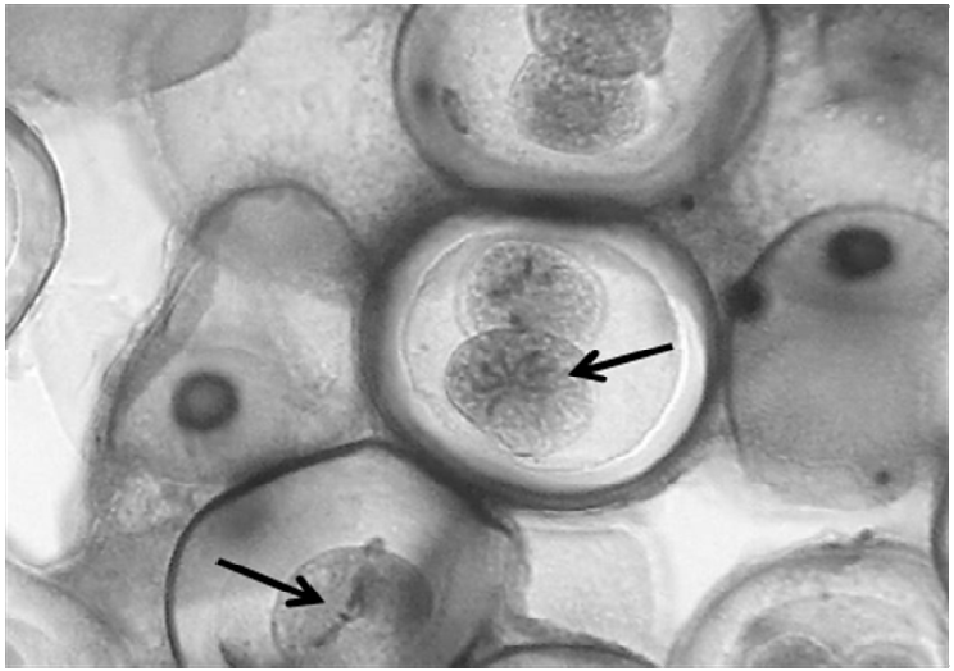
1. **"Mitosis in Onion Root Tip Cells"** (280x):





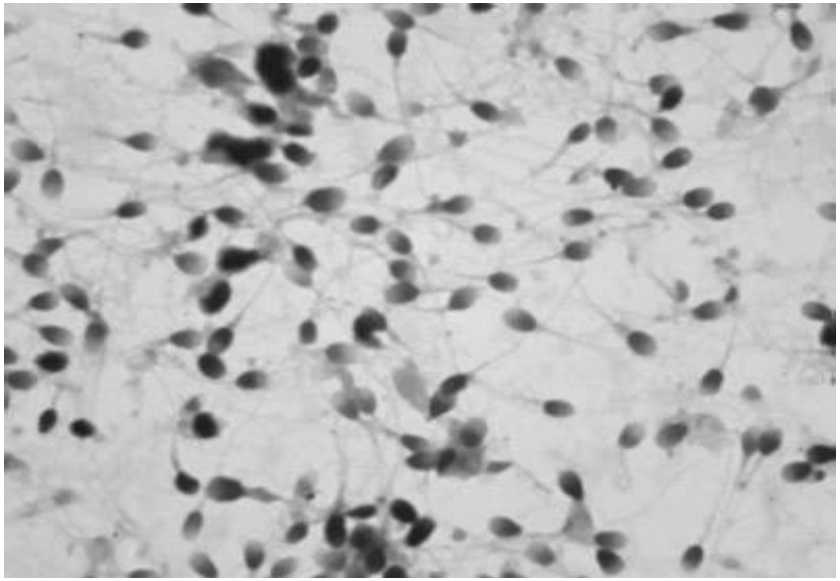
Interphase: material inside the nucleus is largely chromatin which consists of the chromosomes stretched out so that chromosomes cannot be seen separately. Dark structure represents nucleolus. Interphase cells typically have one or more nucleoli. Prophase (1): observe condensing chromosomes (dark parts) in the cell. Note the cell with more distinct chromosomes and those which have lost the nuclear envelope. Metaphase (2)e: observe the chromosomes at the equator of the spindle. Anaphase(3): daughter chromosomes move towards each pole. Telophase: chromosomes uncoil to chromatin, nuclear envelops reform, nucleoli reappear, cytokinesis is nearly complete.

2. “Centrosome in Ascaris egg during cleavage”:



The preparation represents a cut through a body of a uterus horse Ascaris which cavity is filled with zygotes at different stages of cleavage. There are cell in which the mitotic device consisting of long threads, going between centrioles both forming an spindle and short, departing from centriole to the periphery and forming radiant light is accurately visible. Chromosomes are on the spindle equator.

3. Human spermatozoa (560x)

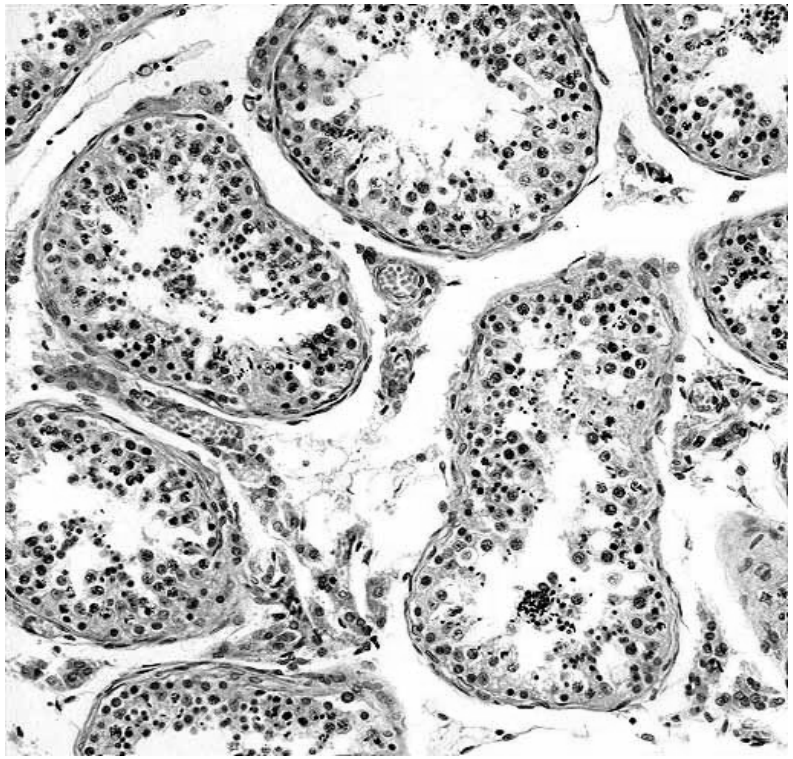


Sperms consist of an oval head, poorly noticeable neck and long flagella

4. "Antral follicle (Graafian follicle) of cat ovary" (560x).

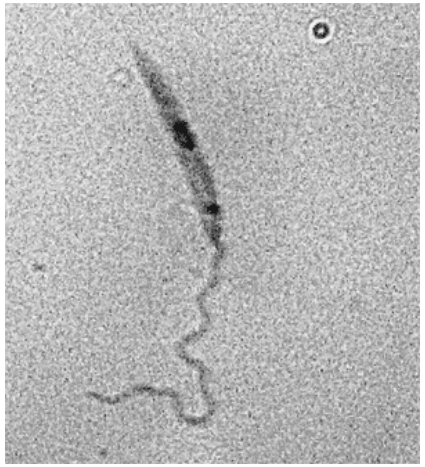
Mature follicle (Graaffian blister) contains a primary oocyte surrounded by follicular cells. In the primary oocyte nucleus and cytoplasm are visible. The cell is surrounded by pink, strongly refracting light, transparent zone. Follicular cells begin to differentiate themselves into corona radiata that surrounds the zona pellucid. On Graaffian`s periphery of the follicle cells producing estrogens are situated.

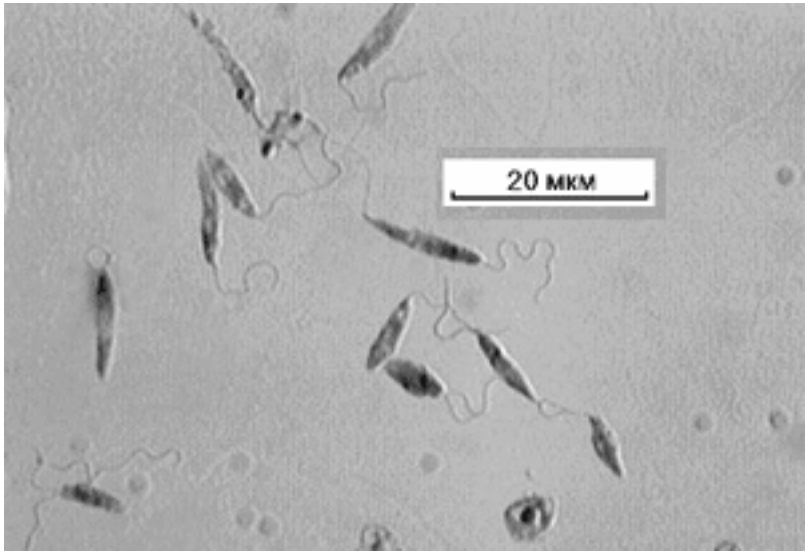
5. “Rat testis” (56x and 280x).



There are convoluted seminiferous tubules in cross section. Areolar tissue is situated between convoluted tubules. Accumulations of glandular interstitial cells and vascular capillaries are localized there. Epithelium of the tubule consists of Sertoli cells, which are tall, columnar type cells that line the tubule. In any, viewed with the microscope, you can see about five generations of the cells each forming a circular layer, with the youngest generation at the periphery of the tubule, and the oldest associated with the tubule lumen, but they look different from one tubule to the next. This is because you see various stages in a cycle of the seminiferous epithelium. Thus, spermatogonia have spherical or oval nuclei, and rest on the basement membrane. Primary spermatocytes are characterized by highly condensed chromosomes giving the nucleus a coarse chromatin pattern and an intermediate position in the seminiferous epithelium. This is a long stage, so many primary spermatocytes can be seen. Primary spermatocytes go through the first meiotic division and become secondary spermatocytes. The cells quickly proceed through this stage and complete the second meiotic division. Because this stage is short there are few secondary spermatocytes to be seen in sections. The products of the second meiotic division are called spermatids. They are spherical cells with interphase nuclei, positioned high in the epithelium. Since spermatids go through a metamorphosis into spermatozoa, they occur in early through late stages. Spermatozoa are in the most inside layer. Their tails are turned into a lumen of tubules.

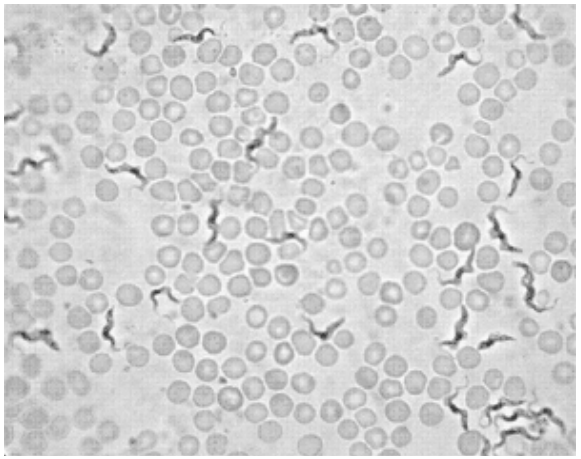
6. Leishmania.





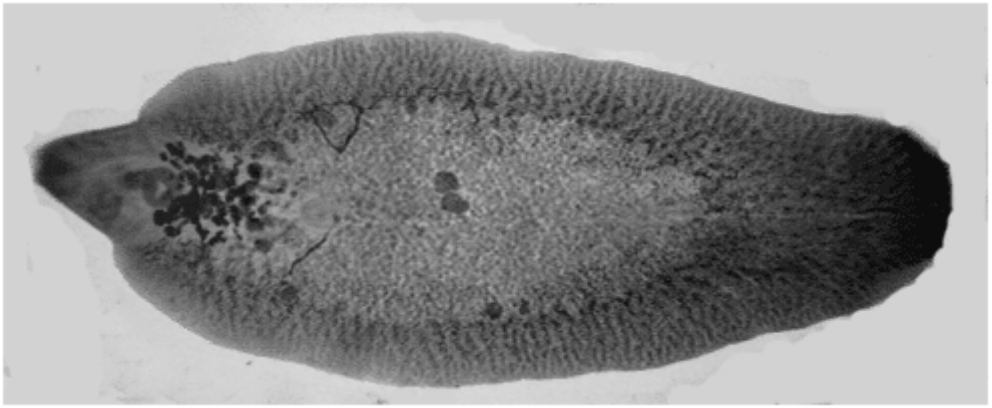
There are visible a spindle-shaped form of a leishmania. Length of their 18-20 microns, width is 4-5 microns. Cytoplasm is painted in light blue color. In average part of a body the oval or round kernel of violet color lies.

7. Trypanosoma gambiense (630x):



The preparation represents blood smear of the patient African trypanosomiasis. Among blood cells there are the extended form the parasites painted in blue-violet color. There is flagella going along a body and freely acting on the forward end. Between flagella and a body at large copies it is possible to see an undulating membrane.

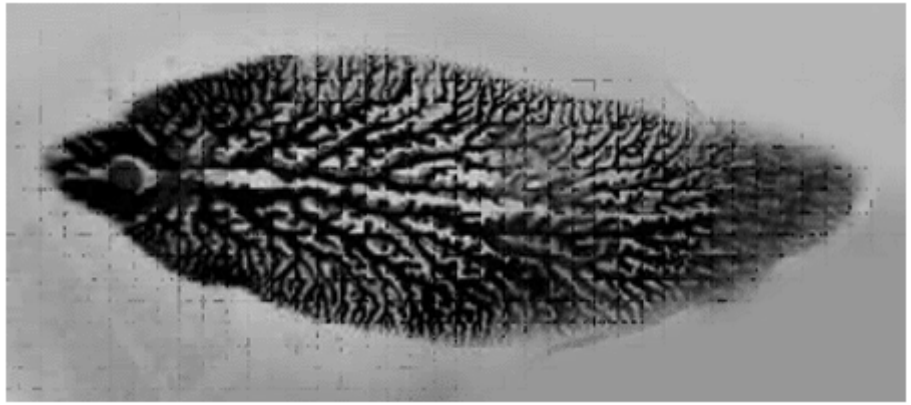
8. **Fasciola hepatica**:



There is a large trematode measuring 40x13 mm. The cuticle covers the body surface. Two suckers are present. The oral sucker is at the top and the ventral one at the anterior part of the body.

Reproductive system occupy large proportion of the body. The main morphological feature is the extensive branching of the vitelline glands and testes. The ovary is dendritic and is situated anterior to a circular ootype. The uterus is a coiled structure seen near the anterior end in which the fertilized eggs are stored previous to leaving the fluke organism.

9. **Digestive system of Fasciola hepatica**:



There is an opening in the oral sucker which leads to the muscular pharynx. Two long main branches of intestines which are blindly coming to an end in the back end of a body depart from it. The remainder of the food is discharged through the mouth.

10. **Excretory system of Fasciola hepatica**:

The excretory system is composed of flame cells sprayed all over in the body. They are connected by a large single central channel through the small branches. The central channel has the opening i the tail end of the body.

11. **Opisthorchis felineus (**16x):

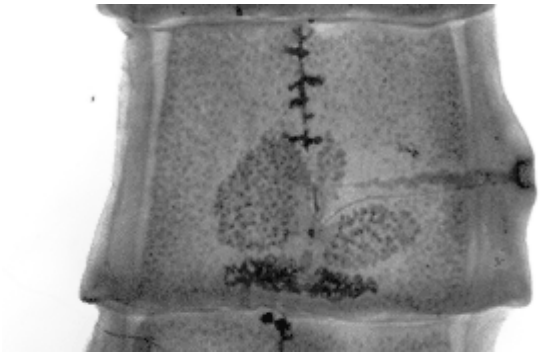
The size of the adult fluke is about 1 cm. Morphology and inner systems are also similar to other trematodes. The main morphological difference is in reproductive system. Behind the ventral sucker a large branched uterus is located. In parallels to uterus on both sides vitelline glands are situated. Two bean-form testes are clearly seen in anterior end of the body.

12. **Dicrocoelium lanceatum**:

Morphology and inner systems are also similar to other trematodes. The size of the adult fluke is about 5-15 mm. The digestive system begins with the oral sucker, which leads to the muscular pharynx, and the latter divides in two symmetrical channels - intestines. The intestines do not branch intensively.The excretory system consists of so called flame cells, sprayed all over in the body. They are connected by a large single central channel through the small branches. The central channel of the excretory system has the opening in the tail end. The nervous system is made of the main ganglion node in the frontal part of the body and nerve trunks.

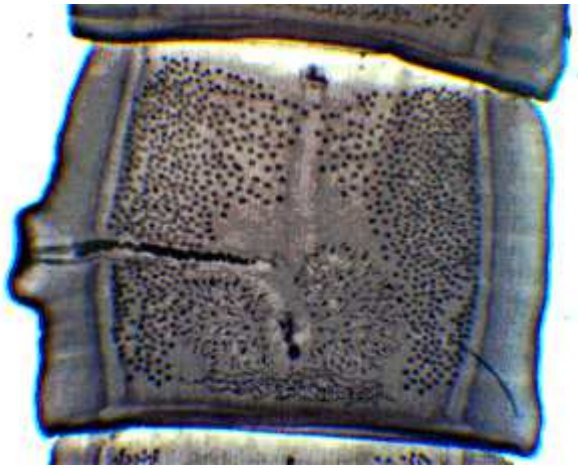
The reproductive system occupies the most proportion of the body. Both female and male organs are present. Behind the ventral sucker two testes of irregular shape are located and behind the testes a rather small ovary is located. A large and coiled uterus occupies the middle and distal parts of the body. In the middle third of the body on sides vitelline (yolk) glands are situated.

13. **A hermaphroditic proglottid of Taenia solium**:



The hermaphroditic proglottid has both male and female reproductive organs). The male reproductive system consists of a number of testes scattered in the proglottid and connected to a vas deffercns which leads into the cirrus pouch, containing a cirrus. The cirrus opens into the common genital atrium. The female reproductive system consists of a single three-lobed ovary, which is located in the posterior part of the segment. An oviduct arises from the ovary and leads to the ootype. The vitelline gland is situated behind the ovary. The vitelline duct and the duct from the seminal receptacle also open at the ootype. The ootype leads into the uterus.

14. A hermaphroditic proglottid of Taeniarhynchus saginatus

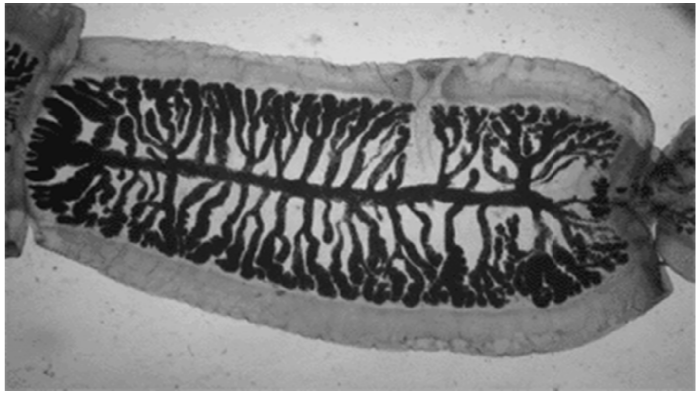


The hermaphroditic proglottid differs from that of Taenia solium by having on ovary of two parts.

15. **A gravid proglottid of Taenia solium**:

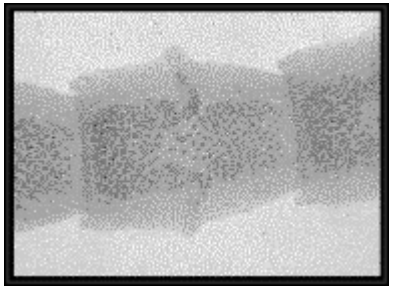
Gravid proglottids have cuboid shape. The uterus occupies all the volume of a proglottid. There is the central channel of the uterus and 8-12 side branches**.**

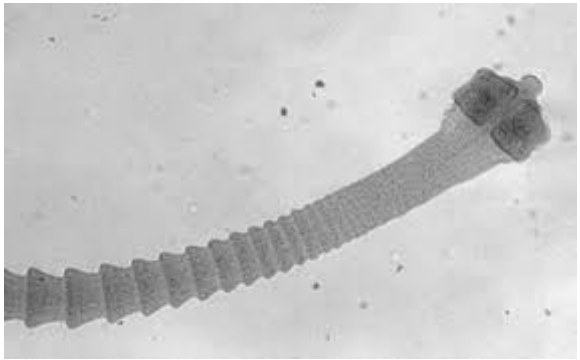
16. A gravid proglottid of Taeniarhynchus saginatus



This type of proglottids has a cylindrical shape (more long then wide). The uterus filled with eggs, forms 17-34 side branches

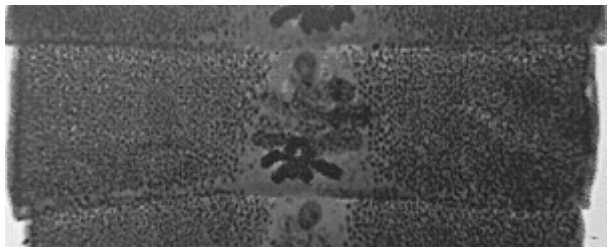
17. **Dipylidium caninum**.





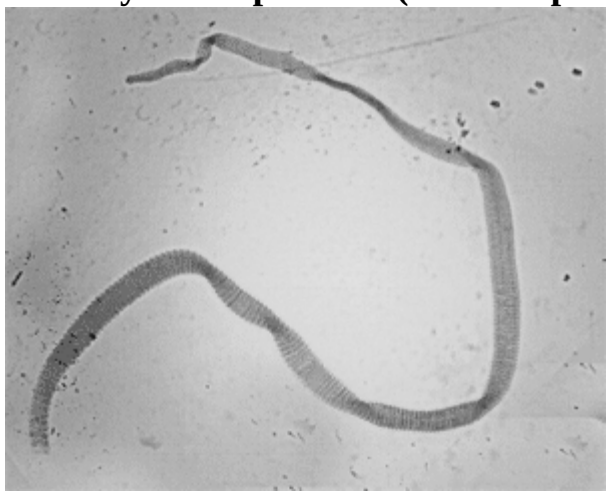
It also called the flea tapeworm or the double-pore tapeworm, is a cestode that infects organisms afflicted with fleas and canine chewing lice, including dogs, cats, and pet-owners, especially children. Adult worms are about 18 inches (46 cm) long. Gravid proglottids contain the worm's microscopic eggs.
The scolex has a retractable rostellum with four rows of hooks, along with the four suckers that all cyclophyllid cestodes have.

18. Diphyllobothrium latum



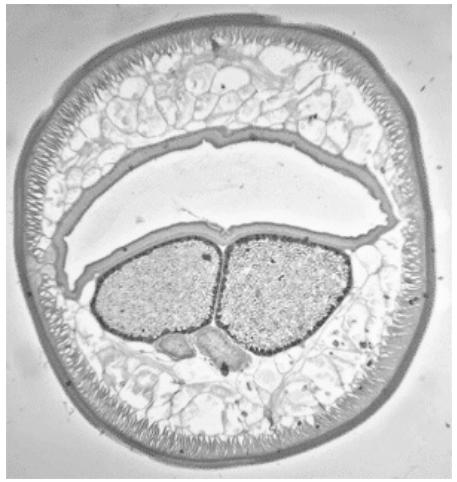
The adult worm is composed of three fairly distinct morphological segments: the scolex (head), the neck, and the lower body. In adults, proglottids are wider than they are long (hence the name broad tapeworm). The mature proglottids are broader than long, with the typical rosette-shaped uterus. They measure up to 2 cm in width.

19. **Hymenolepis nana (Dwarf tapeworm)**:



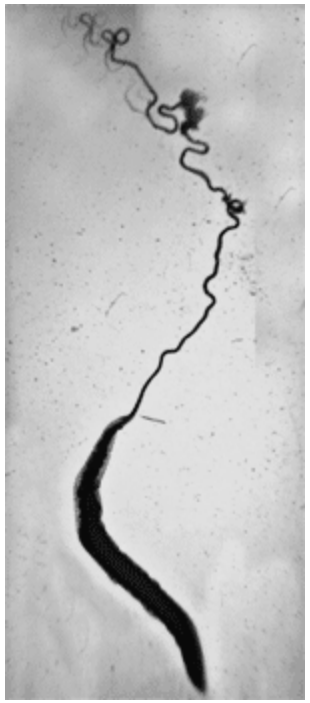
It is a small species, 40 mm long and 1 mm wide. The scolex also has four suckers and 20 to 30 hooks. or a tetrad. The neck is long and slender, the region of growth. Strobila starts with short, narrow proglottids, followed with mature ones. Genital pores are unilateral, and each mature segment contains three testes. After apolysis gravid segments disintegrate, releasing eggs, which measure 30 µm to 47 µm in diameter. On a preparation it is possible to see scolex a pear-shaped form. On it 4 suckers and hooks are located.

20. Cross-section of Ascaris lumbricoides



This slide shows a cross section of a female, large intestinal roundworm (Ascaris lumbricoides). The section shows the outer protective cuticle, which is secreted by the underlying hypodermis. Longitudinal muscle bands, the intestine and body cavity (pseudocoelom) are clearly visible. The slide also contains various sections through the long, coiled tubules that make up the reproductive system. The system begins with the ovaries that lead to thicker oviducts that lead to the two large uteri containing the eggs. These uteri eventually join to form the vagina (not shown on the slide), which exits at the genital pore.

21. Самка власоглава Trichocephalus trichiurus



T. trichiurus adult parasites are characterized by a long thin anterior end that lies in a burrow in the host mucosa, and thicker end that extends into the intestinal lumen. The worms are 30 to 50 mm in length roughly.