

# GIT Micro Lab

## parasitology Practical slides

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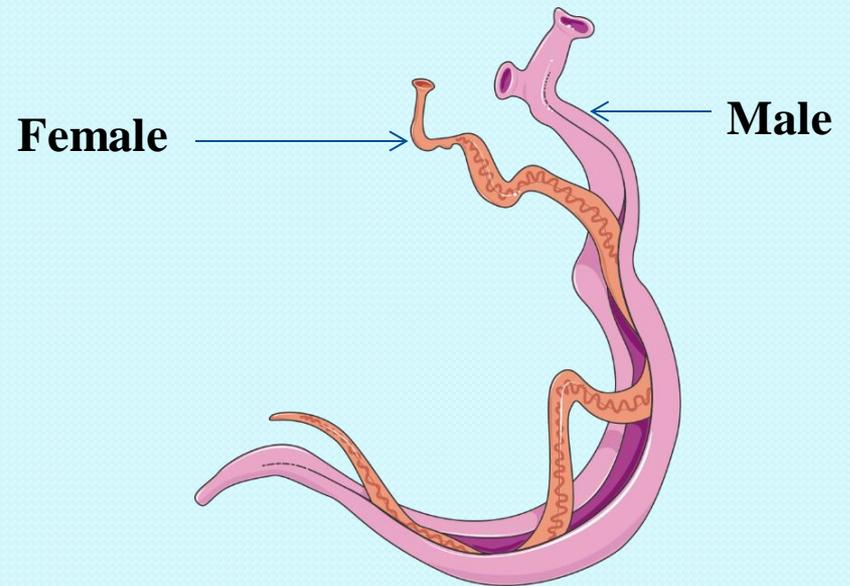
# Schistosoma

Cylindrical worm (Not flat – leaf like).

Only trematode in which sex is separated while other trematodes are hermaphrodite (Monoecious)



**Trematoda (flukes)**



**Schistosoma**

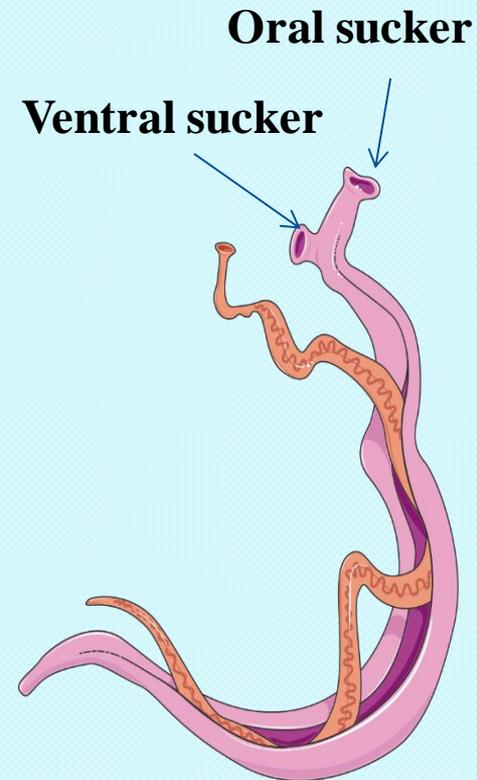
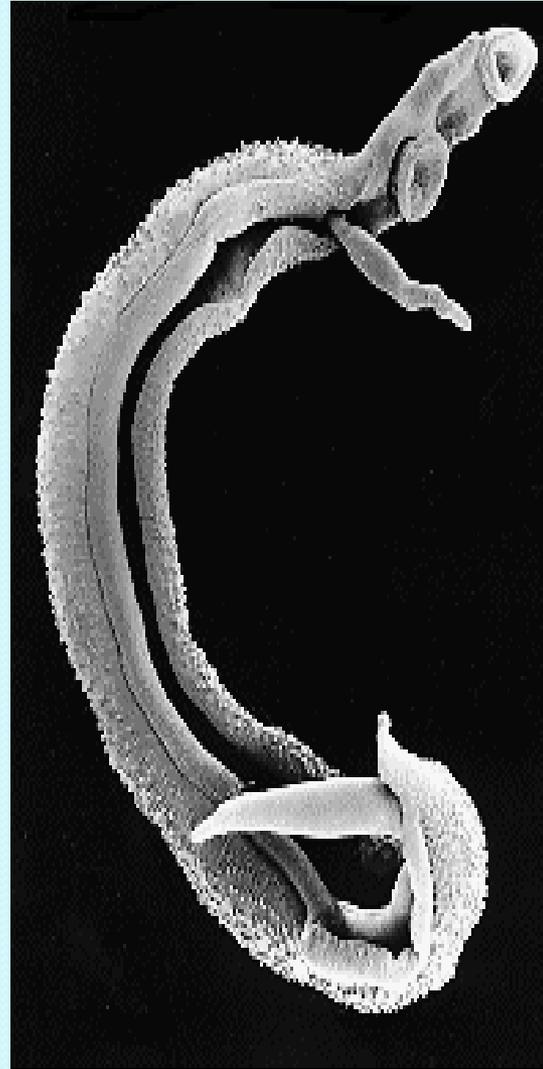
# *Schistosoma mansoni* male

❖ **Size : 8 x 1 mm.**

❖ **Oral & Ventral suckers.**

❖ **Testes: 6 - 9, small and lie in cluster.**

❖ **Gynecophoric canal in which female held during copulation**

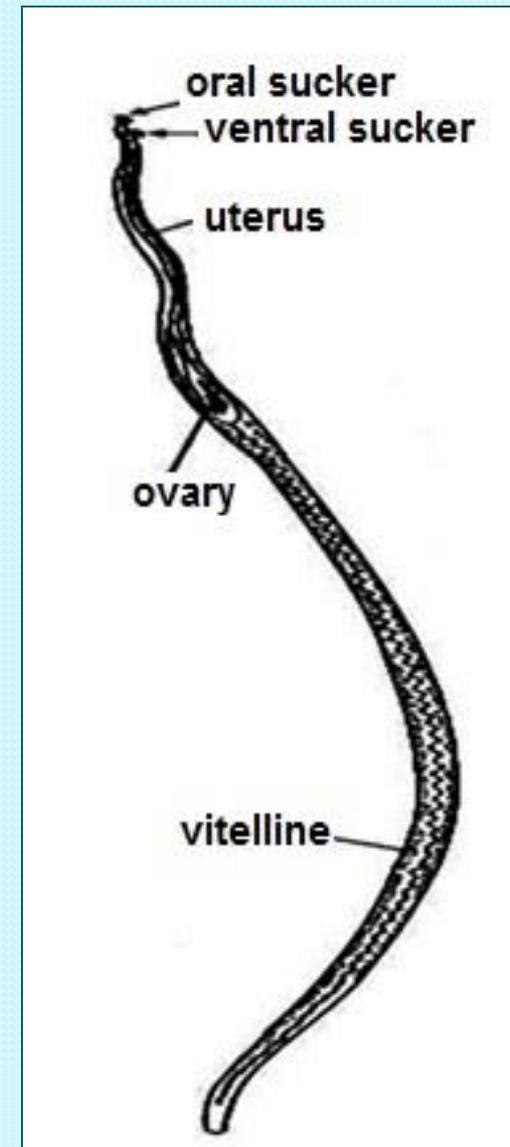


# *Schistosoma mansoni* female

❖ **Size:** 14x 0.15 mm

❖ **Ovary:** Anterior 1/3 of the body

❖ **Uterus:** Short with 1-4 ova.



# Egg of *S. mansoni*

- ❖ **Shape:** Oval with lateral spine
- ❖ **Colour:** Translucent
- ❖ **Content:** Mature (fully developed miracidium).

## Egg of *S. japonicum*:

- ❖ eggs are more round with a small spine on the side.



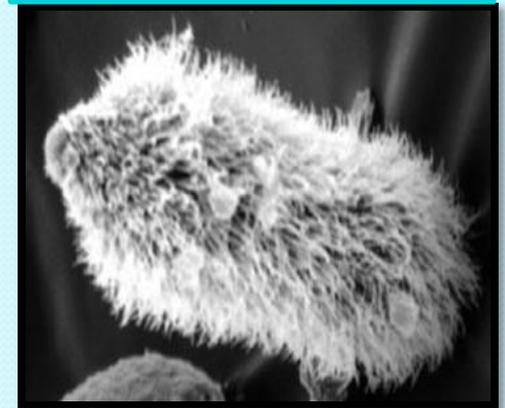
*S. japonicum*



# *S. mansoni*



## Miracidium



Ciliated larva

## **Cercaria of *S. mansoni* (I.S)**

❖ **Body** : Oral and ventral suckers, primitive gut and 5 pairs of penetration glands.

❖ **Tail** : Forked  
(**Furcocercuscercaria**).



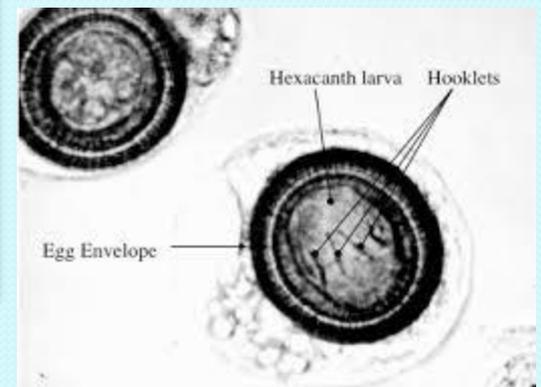
# *Echinococcus granulosus* adult

## 1) Adult:-

- **Scolex:**
  - Globular in shape.
  - 4 muscular suckers.
- **Strobila** : 3 segments : immature, mature & gravid.

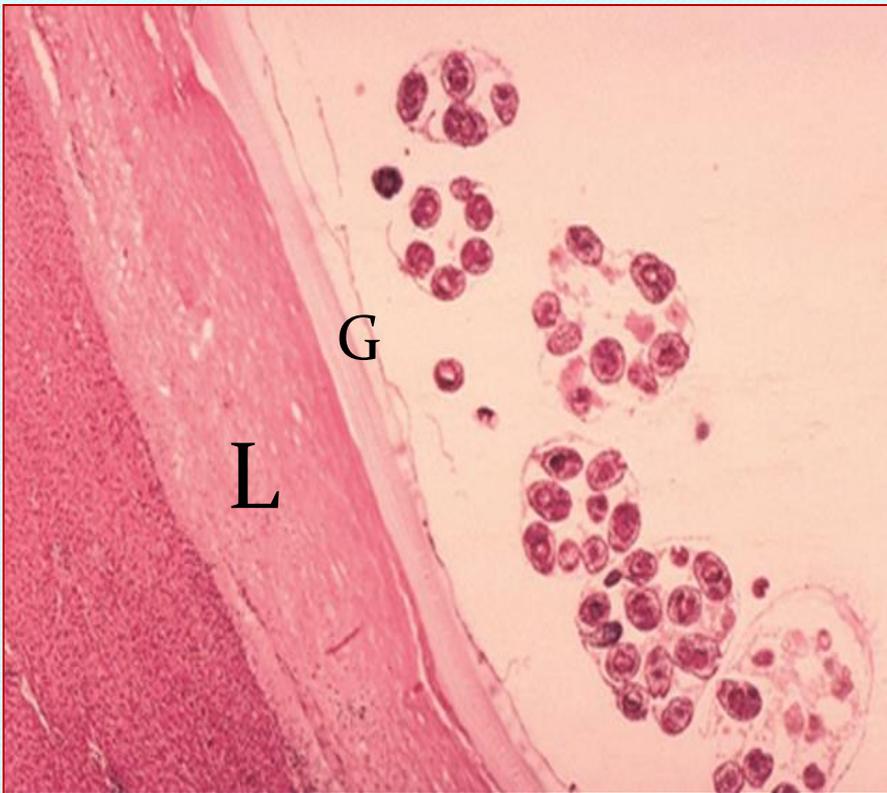
## 2) Egg(IS).

- small and round (30-43µm in diameter).
- thick-shelled.
- contain a hexacanth (6-hooked) embryo.



**Hydatid cyst**  
**(D.S in man and herbivorous)**

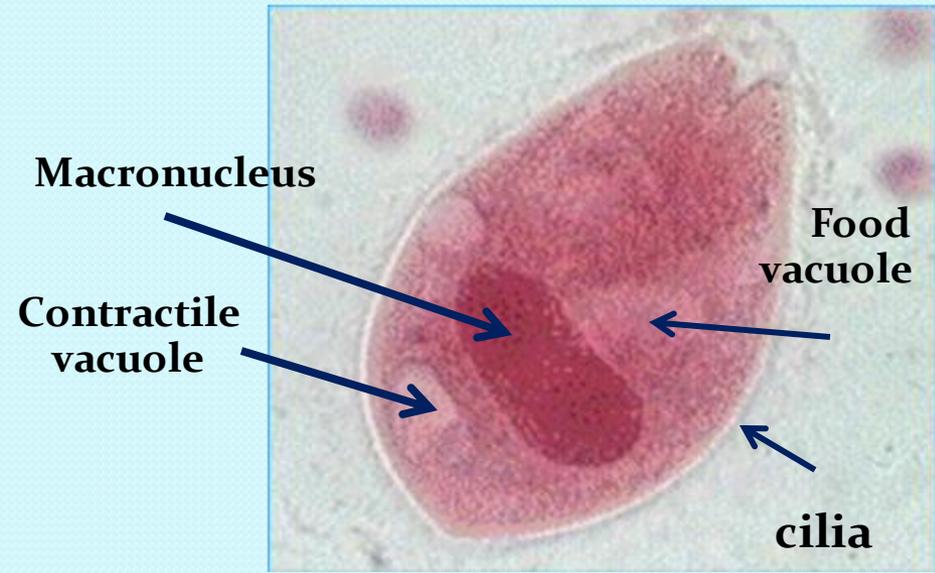
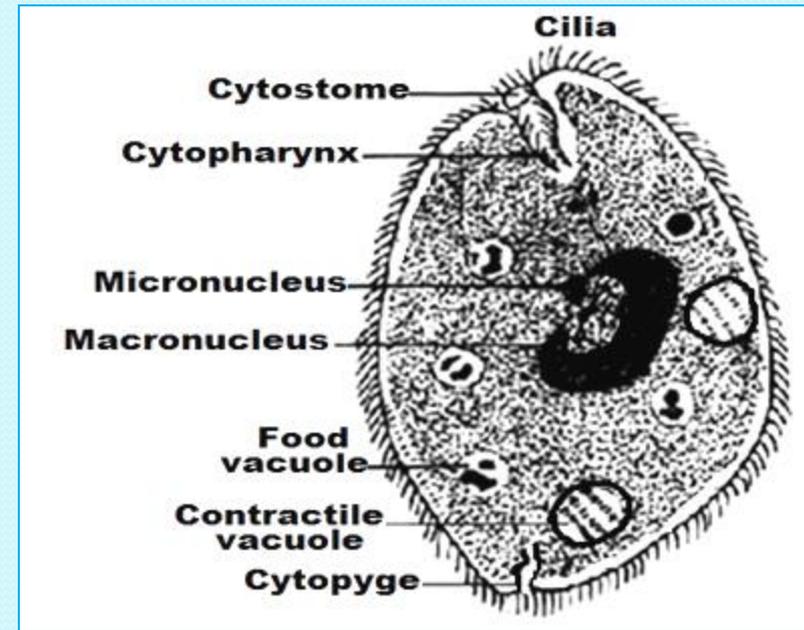
**Simple unilocular**  
**hydatid cyst**



# *Balantidium coli*

## 1-Trophozoite stage

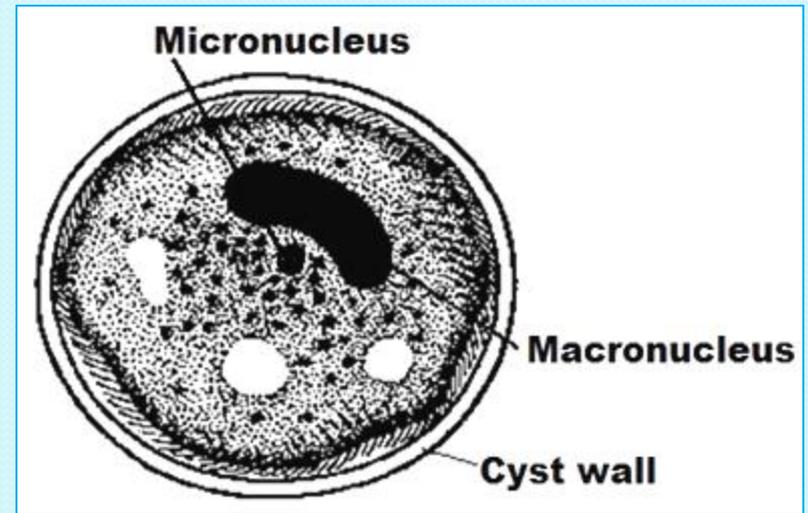
- Oval with pointed anterior end and rounded posterior end.
- Contains numerous food vacuoles, 2 contractile vacuoles, macronucleus & micronucleus
- Cytostome & Cytopharynx



# *Balantidium coli* cyst

## Cyst (D.S&I.S)

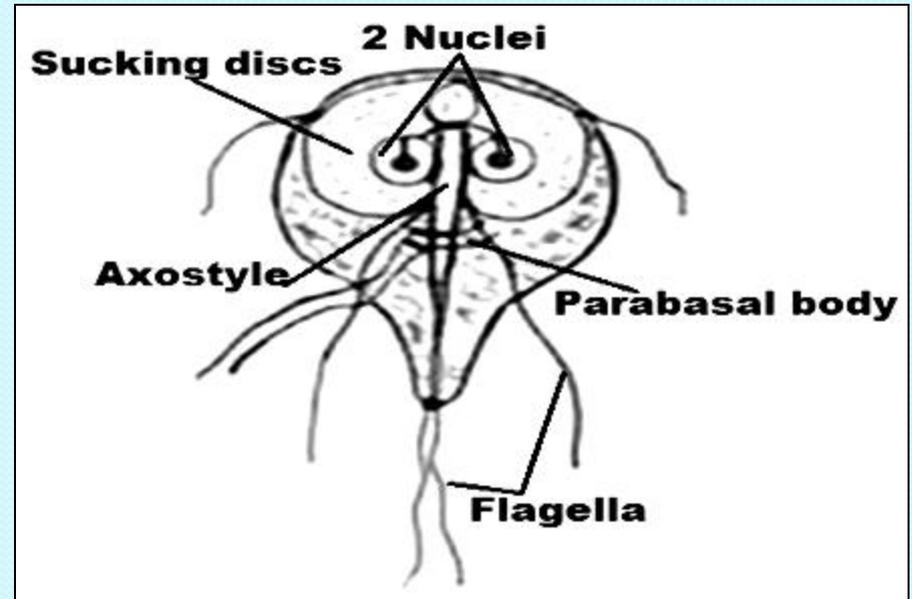
- Rounded with thick double cyst wall.
- Contains a single parasite, food vacuoles, macronucleus and micronucleus



# *Giardia lamblia*

## 1-Trophozoite stage

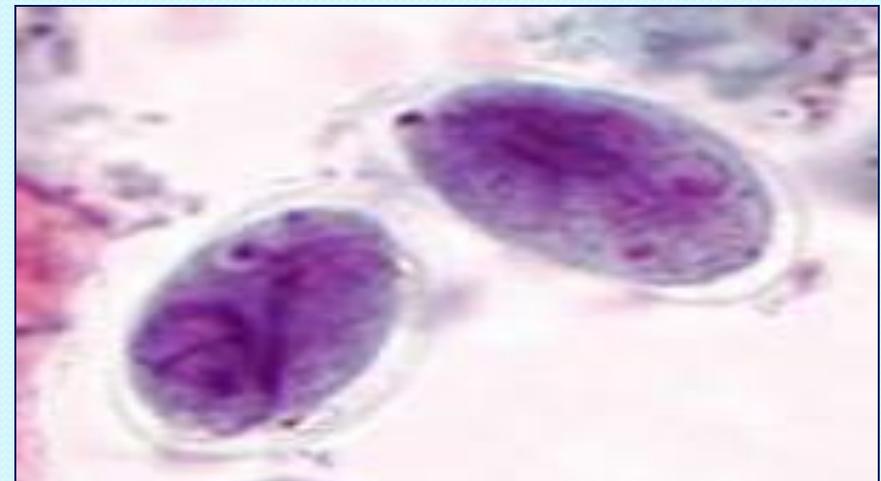
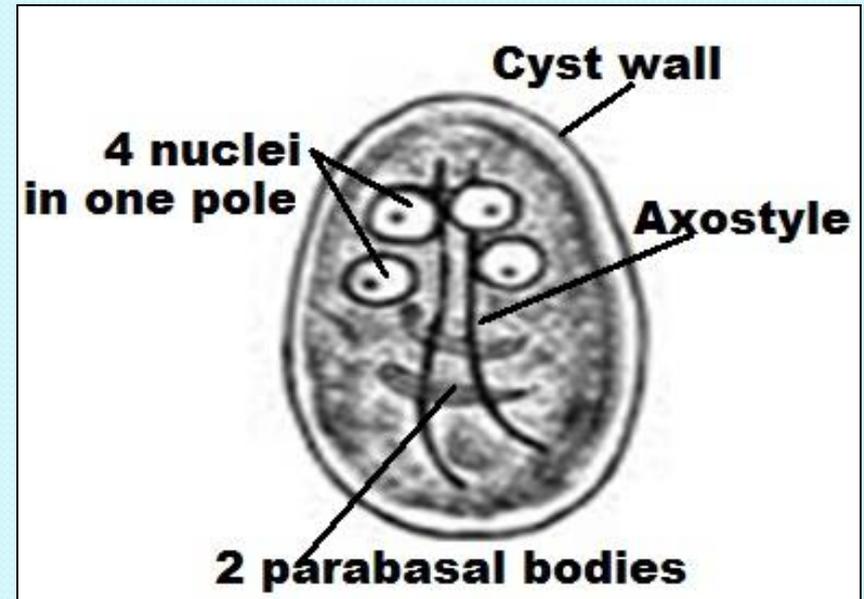
- ❖ Shape: pear in shape with convex dorsal surface & flat ventral surface
- ❖ 2 sucking discs for attachment.
- ❖ 2 oval nuclei with central karyosomes anteriorly.
- ❖ Four pairs of flagella.
- ❖ Axostyle: 2 central rods in the middle
- ❖ Parabasal body: 2 rods across the axostyle.



# *Giardia lamblia* cyst

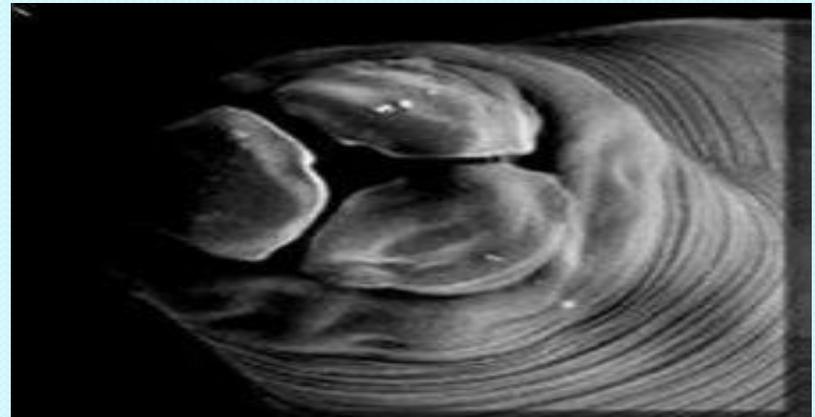
## 2- Cyst (I.S)

- ❖ Size: 12x 7  $\mu\text{m}$
- ❖ Shape: oval with thick cyst wall
- ❖ Contents:
  - 4 nuclei at one pole
  - Fine granular cytoplasm with remnants of flagella, axostyle & parabasal bodies



# *Ascaris lumbricoides* adult

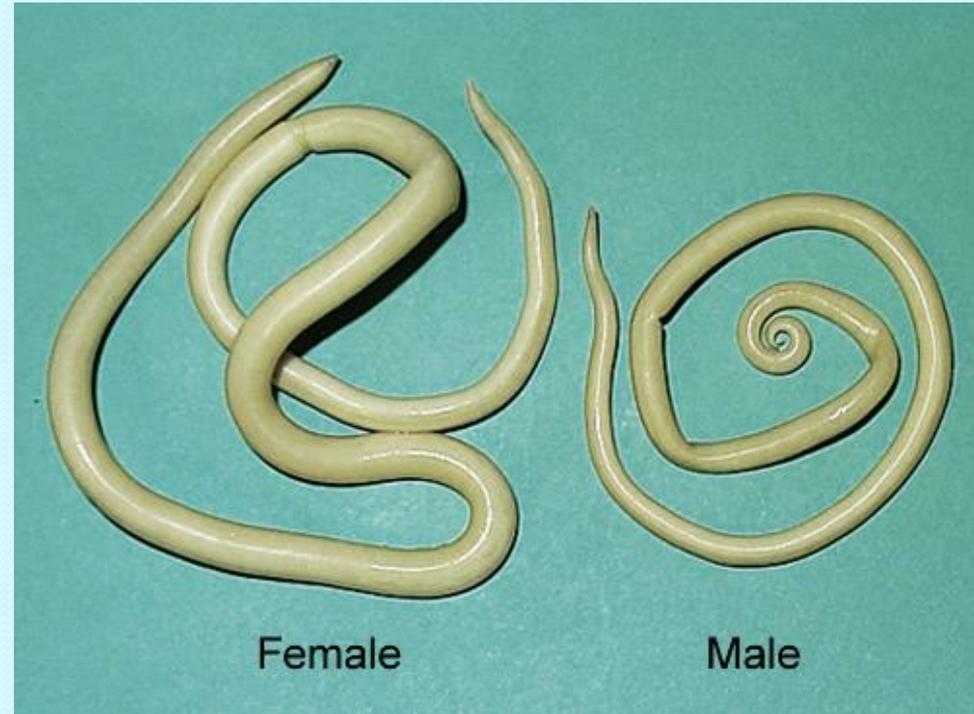
- Long, cylindrical with tapering ends.
- Creamy or pink in color.
- Mouth surrounded by 3 lips, one dorsal and 2 subventral.
- Each lip is provided with 2 sensory papillae and fine teeth.
- Club-shaped oesophagus.



# *Ascaris lumbricoides* adult female

## •Female:

- ❖ Straight posterior end.
- ❖ 2 sets of genitalia.
- ❖ Each female lays about 200.000 eggs / day (oviparous).



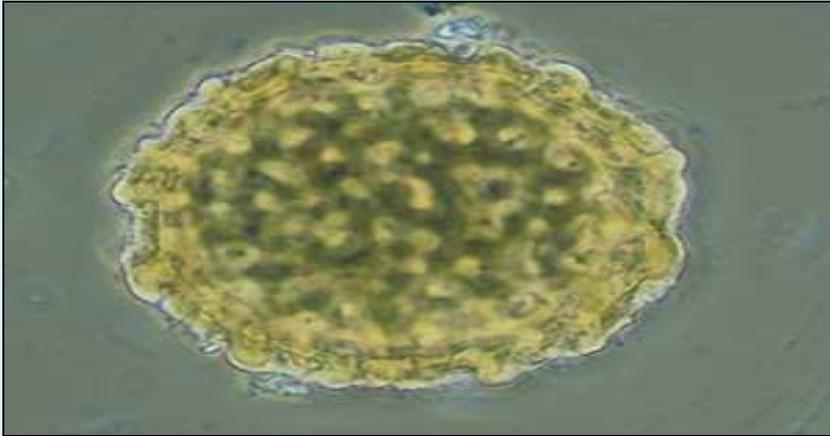
# *Ascaris lumbricoides* adult male

## •Male:

- ❖ Shorter than female.
- ❖ The posterior end is curved ventrally
- ❖ 2 equal spicules.



# Eggs of *Ascaris lumbricoides* (D.S)



**Fertilized egg**

- Size:** 60 × 45 μm
- Shape:** Oval to round.
- Shell:** Inner thick shell & outer mamillated coat.
- Color:** Golden brown (bile stained).
- Content:** Immature (one- cell stage).



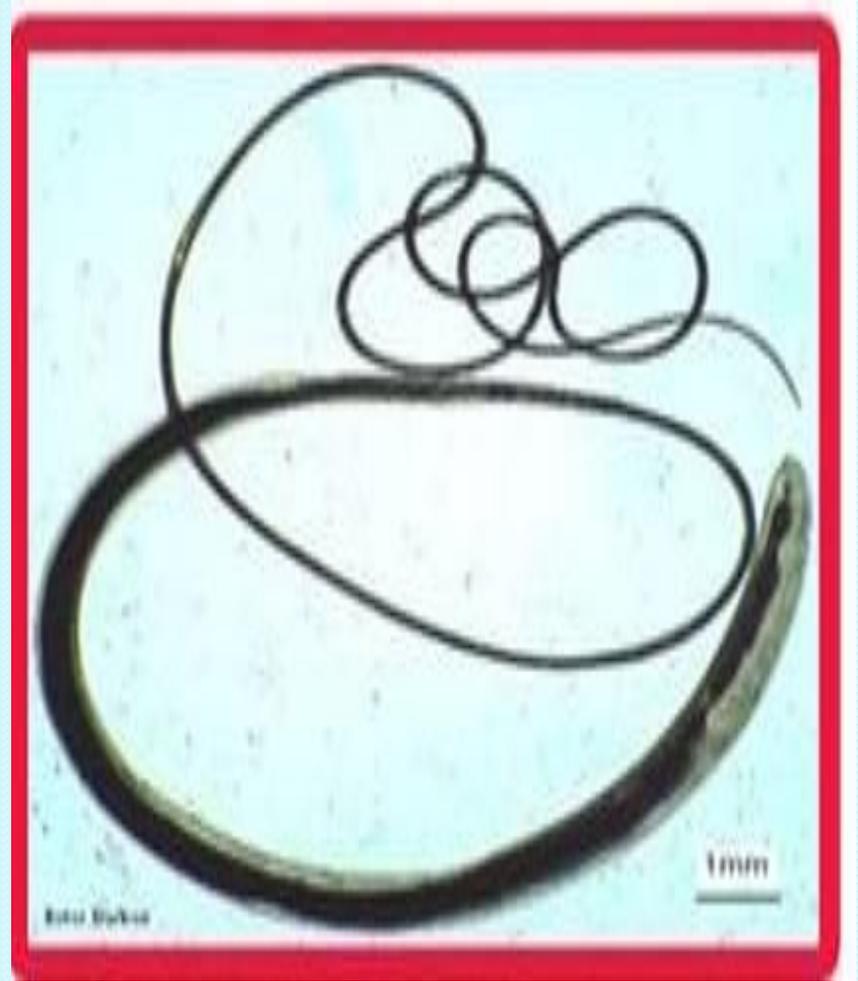
**Unfertilized egg**

- Size:** 90 × 45 μm.
- **Shape:** Elongated.
- **Shell:** Thinner with ill developed mamillated coat
- **Color:** Golden brown.
- **Content:** Multiple granules.

## *Tichuris trichiura* adult female

### Female:

- Straight posterior end.
- One set of genitalia.
- Vulva opens at junction of narrow thin and broad parts.
- Oviparous (3000-10000 eggs/day).



## *Tichuris trichiura* adult male

### Male:

- Shorter than female
- Posterior end curved ventrally.
- One spicule inside a retractile sheath.



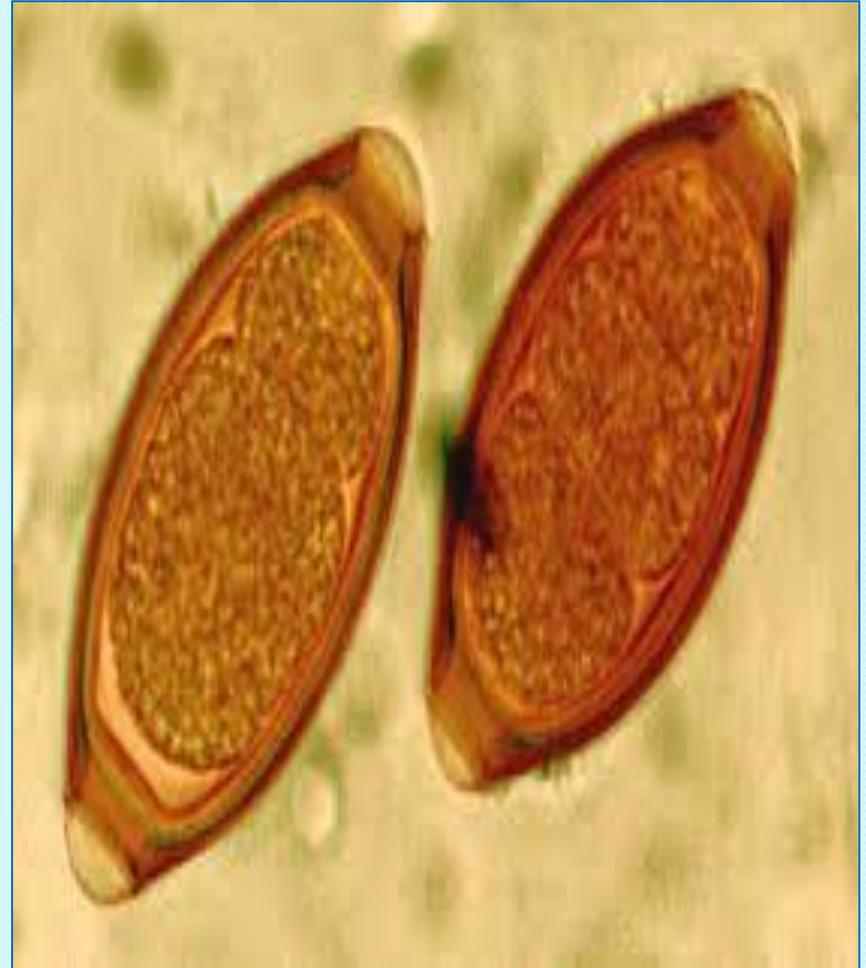
## Egg of *Trichuris trichura* (D.S)

**Shape:** Barrel shaped.

**Shell:** Thick with two polar plugs.

**Color:** Brownish.

**Content:** Immature  
(one cell stage).



# Hookworm

	<i>Ancylostoma duodenale</i>	<i>Necator americanus</i>
<b>Common name</b>	Old world hookworm	New world hookworm
<b>Size</b>	Larger ♀ 12mm ♂ 10mm	Slightly smaller ♀ 10mm ♂ 8mm
<b>Anterior end</b>	Slightly bent dorsally	Strongly bent dorsally
<b>Daily egg output</b>	20.000 eggs / female	10.000 eggs / female
<b>Pathogenesis</b>	-More pathogenic due to higher blood loss by feeding worm (0.5 cc of blood daily/parasite)	-Less pathogenic, blood loss is lower (single worm can consume 0.03 cc of blood/ day)

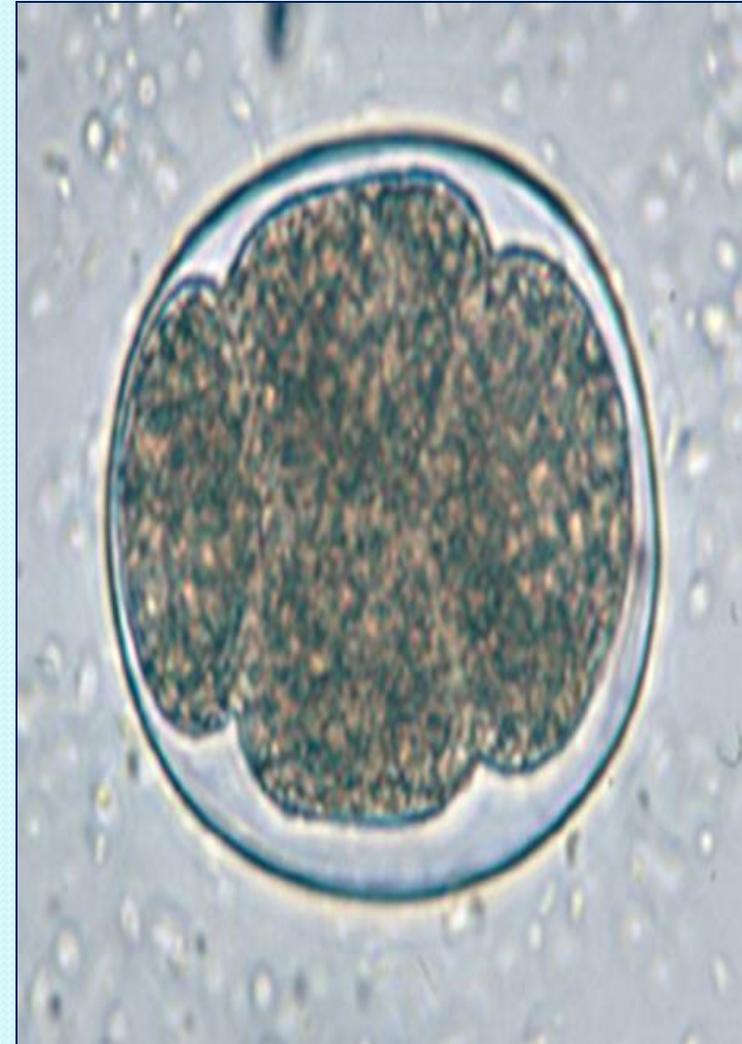
# Egg of *Ancylostoma duodenale* (D.S)

**Shape:** Oval with blunt rounded poles.

**Shell:** Thin.

**Color:** Translucent.

**Contents:** Immature (4-cell stage) with empty space between the shell and contents.



## ***Ancylostoma rhabditiform* larva**

- Smaller.
- Rhabditiform oesophagus.
- Pointed tail end.



## ***Ancylostoma filariform* larva (I.S)**

- Longer.
- Cylindrical oesophagus.
- Pointed tail end.
- Sheathed.



# Strongyloides stercoralis

## Rhabditiform larva (D.S)

Shorter.

Rhabditiform oesophagus.

Blunt end.



## Filariform larva (I.S)

-Larger.

-Cylindrical oesophagus.

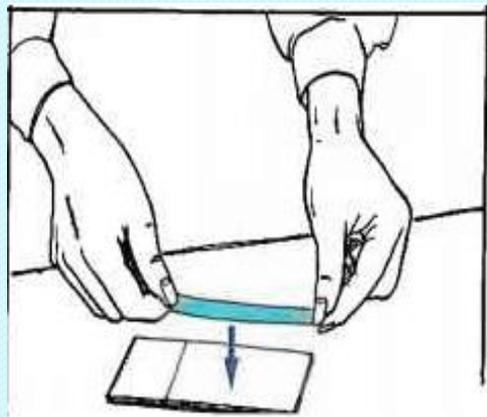
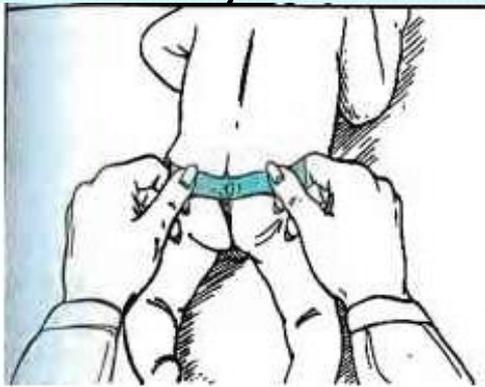
-Non sheathed.



# *Enterobius vermicularis* (pin worm)

## Diagnosis

- Recovery and identification of eggs or adults from the perianal region utilizing the cellophane tape preparation.
- Specimens must be collected the first thing in the morning upon waking, especially before bathing or bowel movements.
- Eggs are rarely found in fecal samples because release is usually external to the intestines.



# Laboratory Diagnosis- *Enterobius vermicularis* (Pin Worm)

## Female

(10mm)  
Posterior end is straight with long pointed tail (4X)



## Male

(5mm):  
Posterior end is curved with one spicule



## Egg:(IS/DS)

Planoconvex or D-shaped egg. embryonated (contain a larva).