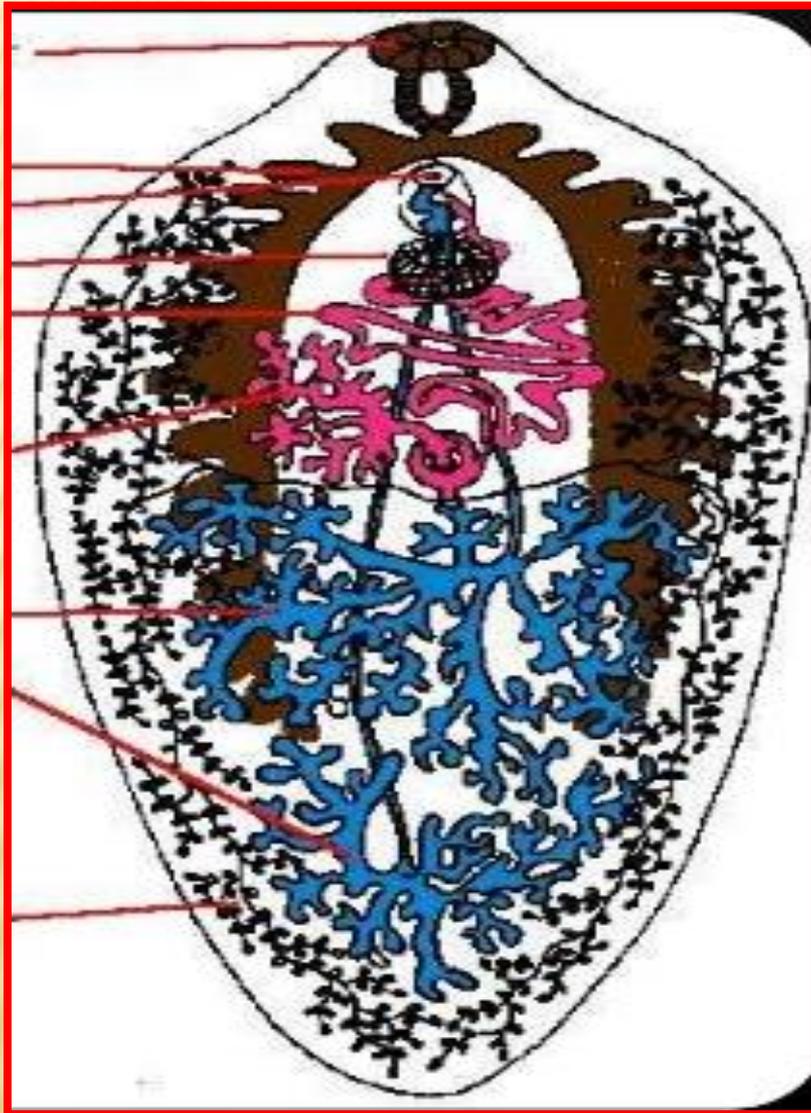


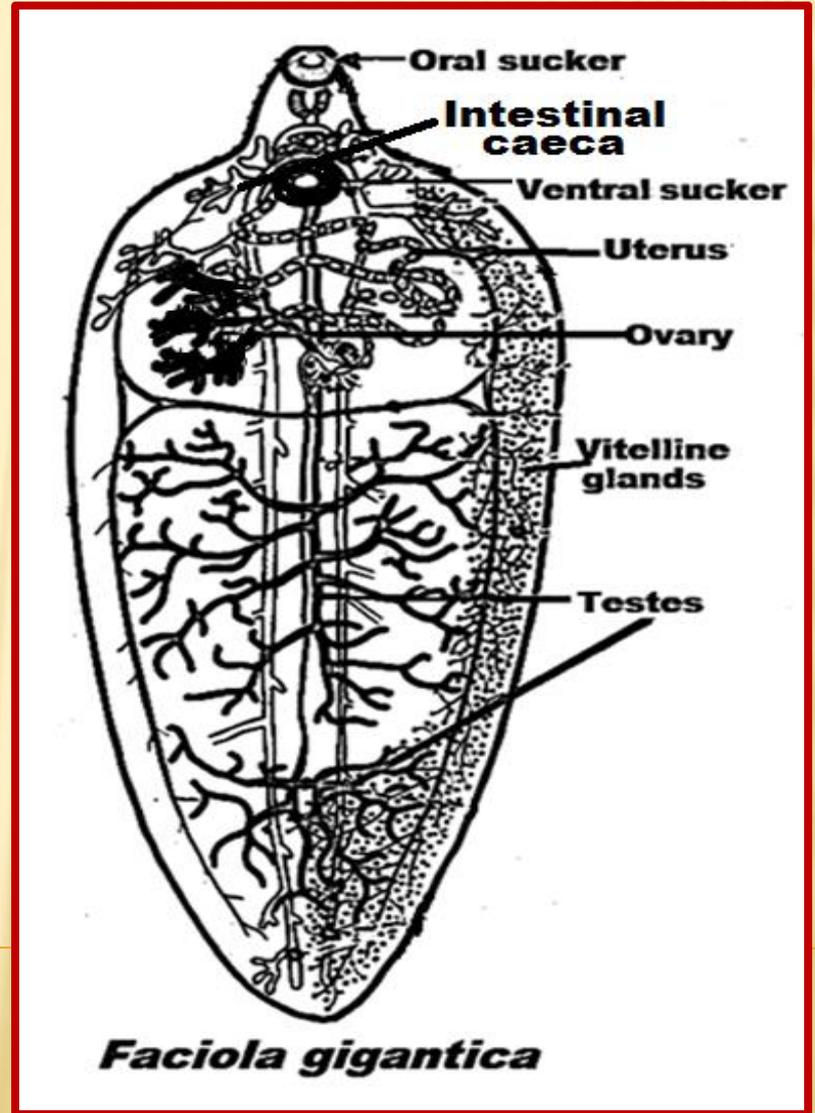
# Parasitology

## Practical Revision

# *Fasciola adult*



*Fasciola hepatica*



*Fasciola gigantica*

*Fasciola gigantica*

# ***Fasciola adult***

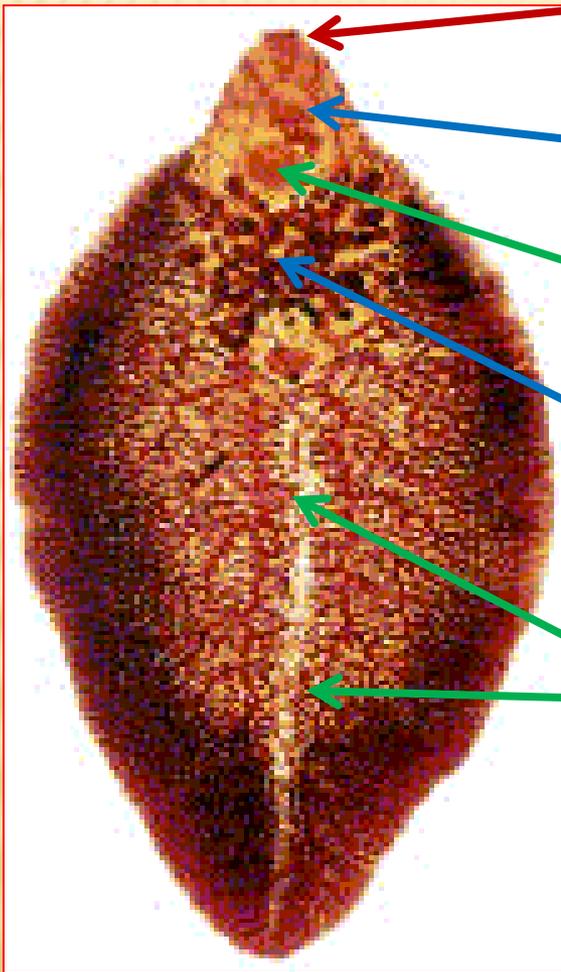
**O.S**

**C.G.P**

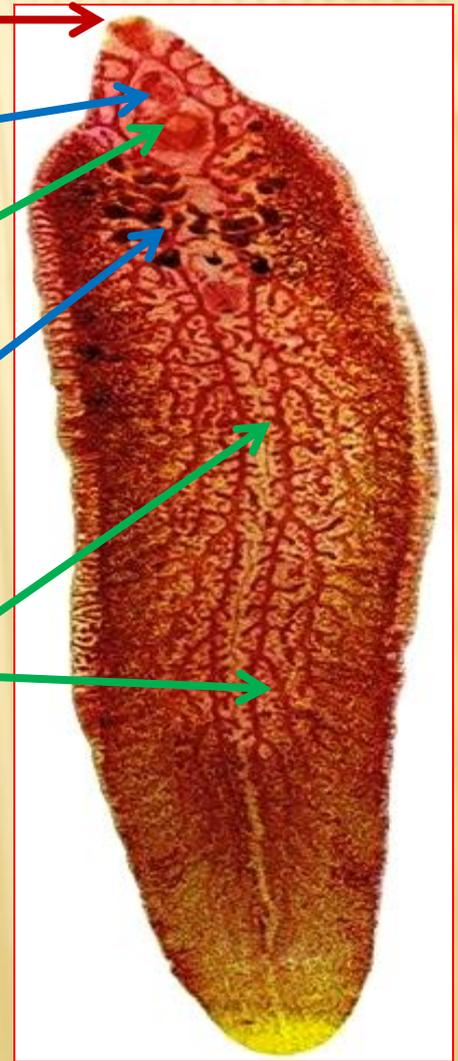
**V.S**

**Uterus**

**2 branched  
testes**



***F. hepatica***

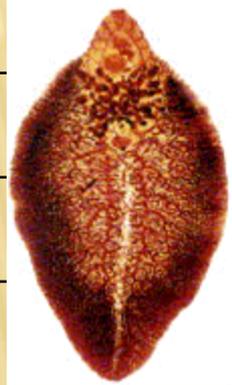
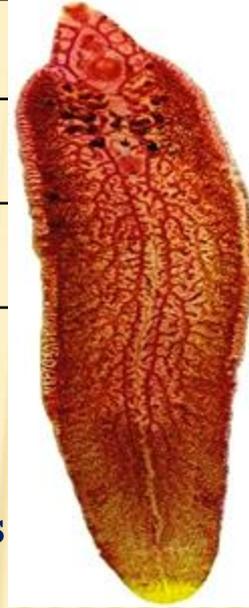


***F. gigantica***

# *Fasciola hepatica*

It differs from *F.gigantica* in the following:-

Items	<i>F. gigantica</i>	<i>F. hepatica</i>
Distribution	Africa , Asia	Common in Europe
Reservoir host	Cattle and sheep	Sheep
Size	6 x1.5 cm	3x1 cm
Shape	Longer and slender with small anterior cone and parallel sides	Wide anteriorly and pointed posteriorly (converging) with large anterior cone
Shoulder	Less prominent	More prominent
Suckers	Ventral larger than oral	Equal in size
Testes	In the middle third	Extended to posterior third
Intestinal caeca	Medial branches are Y or T	Medial branches are simple
Intermediate host	<i>Lymnaea cailliaudi</i>	<i>Lymnaea truncatula</i>



## ***Fasciola* egg (D.S)**

- **Size** : 140 x 70  $\mu\text{m}$ .
- **Shape** : Oval.
- **Shell** : Thin operculated.
- **Color** : Yellowish brown.
- **Content** : Immature  
(ovum & yolk cells).



# ***Lymnaea cailliaudi* snail**

**I.H of *Fasciola gigantica***

**Inside the snail :**

**Miracidium → Sporocyst**

**→ Redia → Cercaria**



## **cercaria of *Fasciola* & *Fasciolopsis***

- **Formed of body and tail.**
- **Body with oral and ventral suckers, simple intestinal caeca.**
- **Tail : Simple (leptocercous cercaria).**

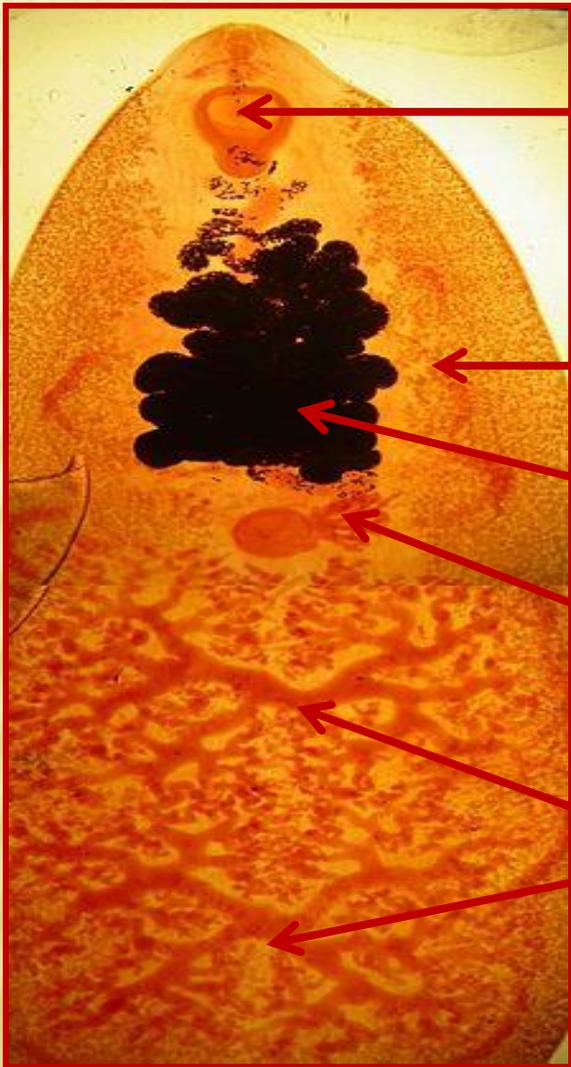


## Encysted metacercaria (I.S) of *Fasciola* & *Fasciolopsis*

- Spherical in shape.
- The cercaria loses its tail and secretes a thick cyst wall.
- Present in green water vegetations and water.



# *Fasciolopsis buski* adult



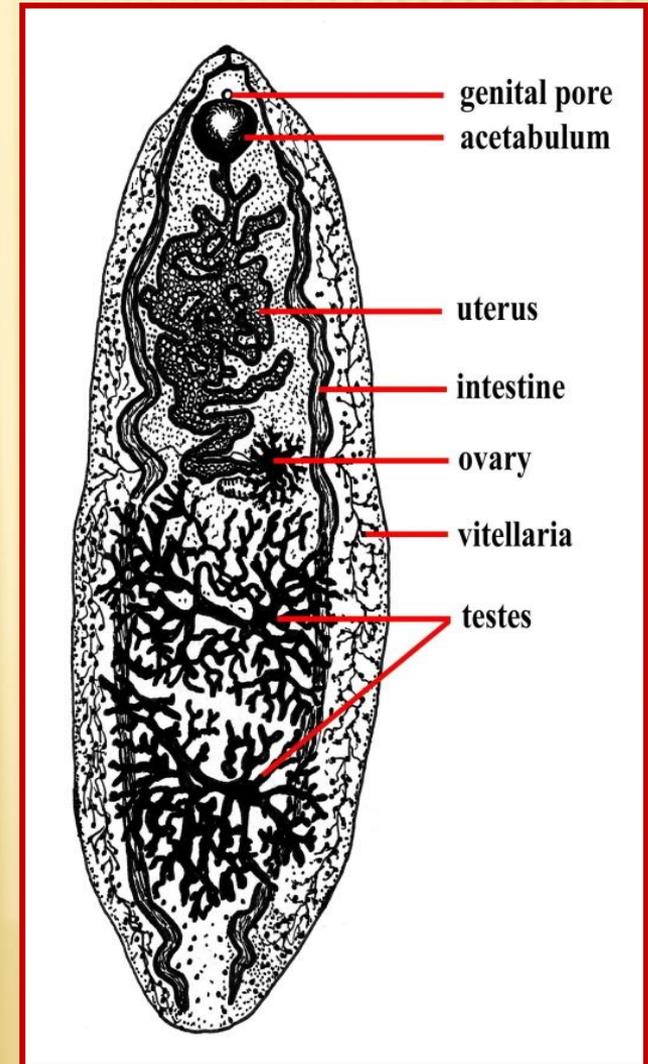
V.S

Simple  
Intestine

Uterus

Ovary

2 testes



genital pore

acetabulum

uterus

intestine

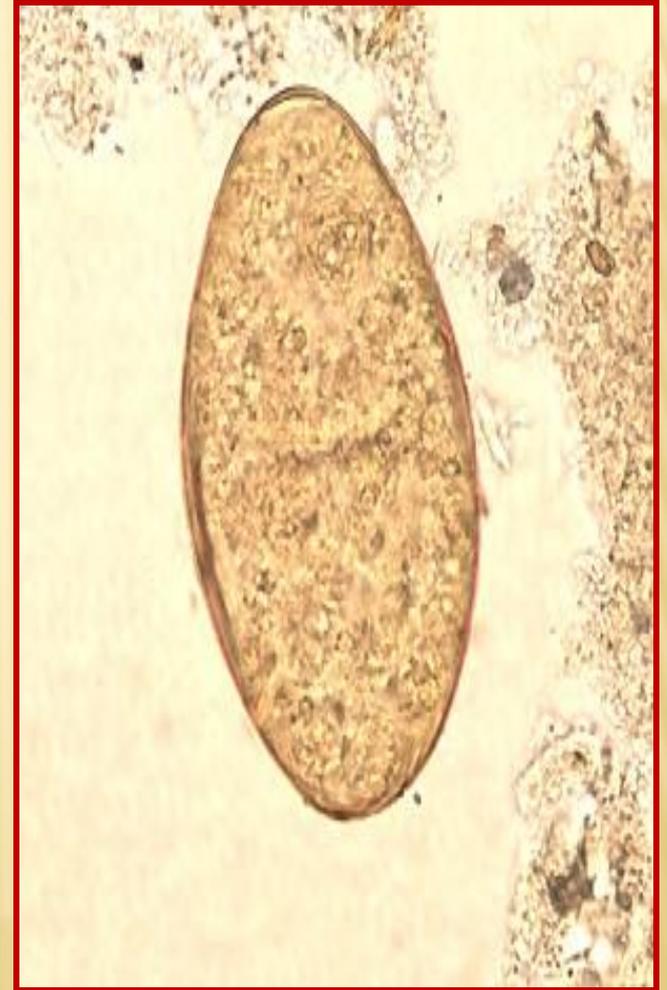
ovary

vitellaria

testes

## ***Fasciolopsis buski* egg (D.S)**

- **Size** : 140 x 70  $\mu\text{m}$ .
- **Shape** : Oval.
- **Shell** : Thin, operculated.
- **Color** : Yellowish brown.
- **Content** : Immature  
(ovum & yolk cells).



# Segmentina snail

❖ I.H of *Fasciolopsis buski*

(miracidium →

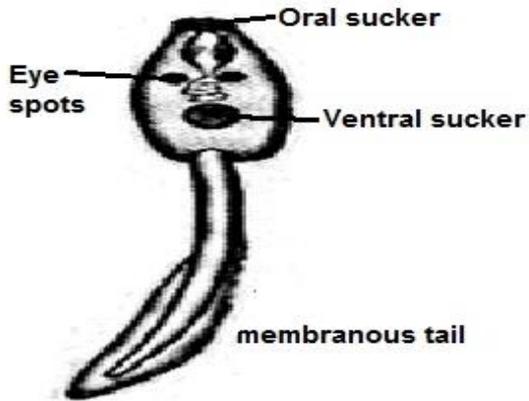
sporocyst → redia

→ cercaria

(leptoceous cercaria).



# Types of cercaria of Trematodes



*Heterophyes*

*Fasciola & Fasciolopsis*



leptocercous cercaria

Lophocercous cercaria



*Paragonimus*

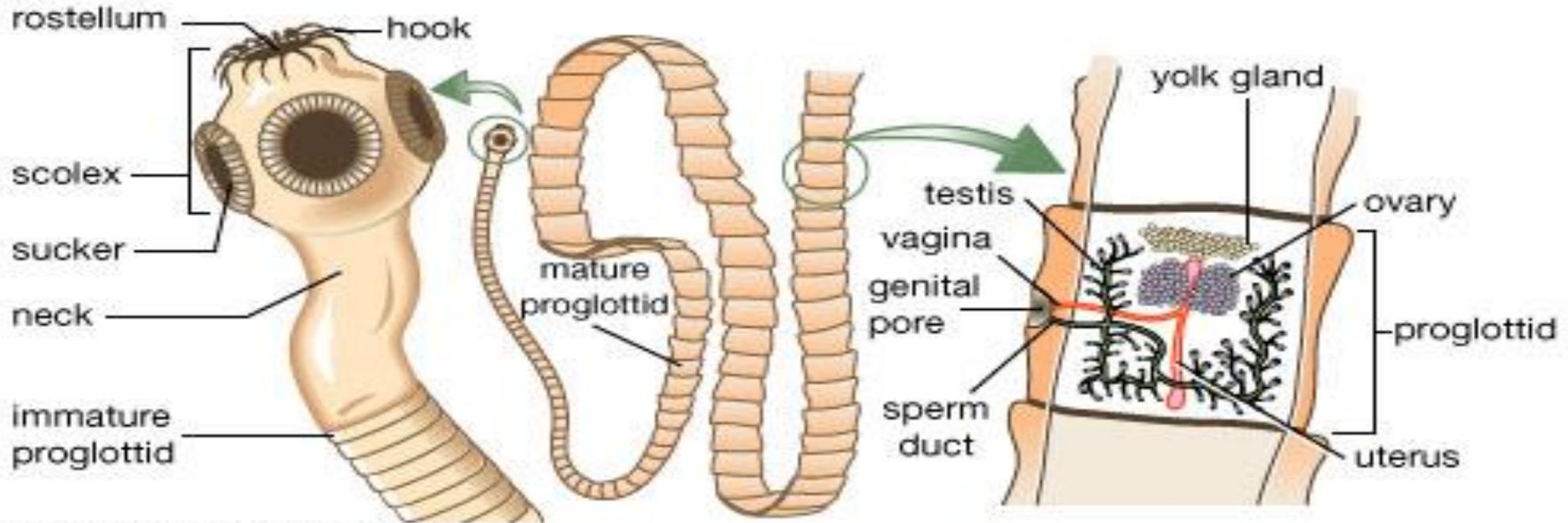
*Schistosoma*



Microcercous cercaria

Furcocercus cercaria

# General characters



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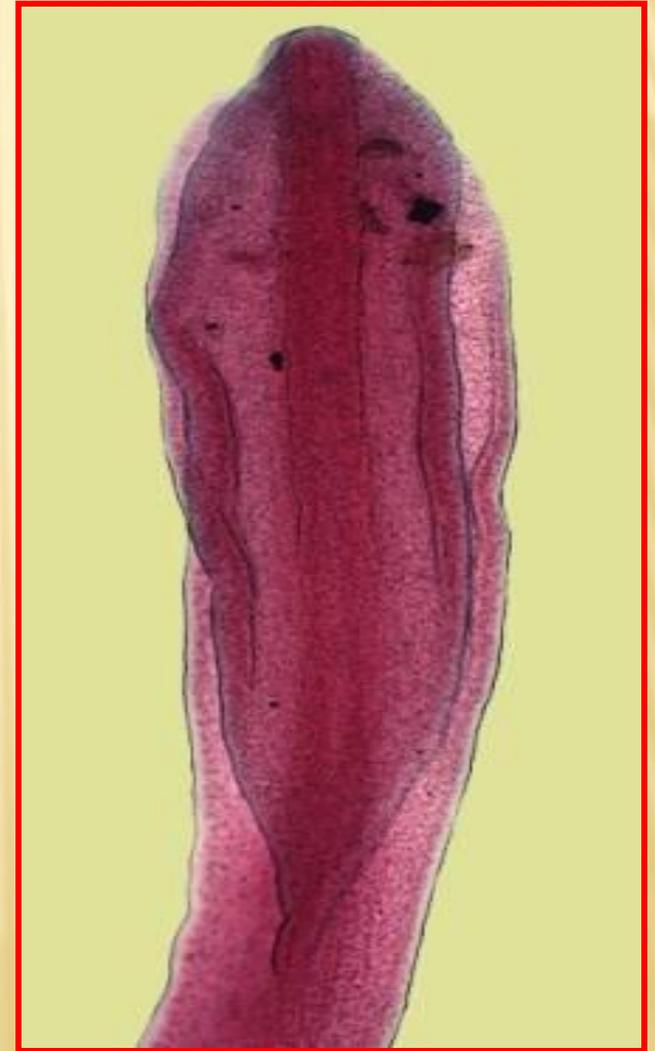
## Adults:

- Flat, ribbon like and segmented.
- Cestodes have **neither a body cavity nor an alimentary tract.**
- Cestodes are **hermaphrodites.**

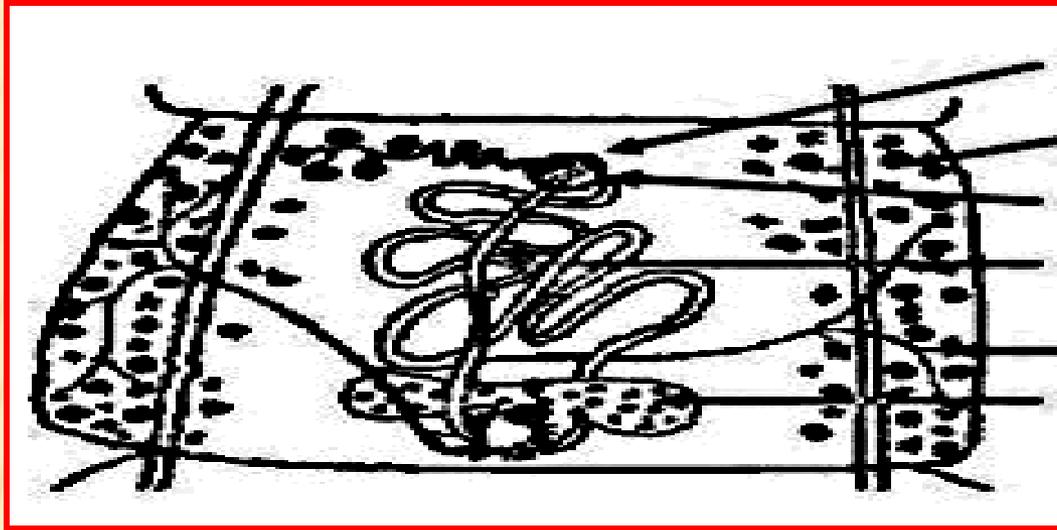
***Diphyllobothrium latum***  
**(broad tapeworm , fish tapeworm)**

**Scolex**

**Elongated, almond like with  
two grooves (bothria), one  
dorsal & one ventral.**



# *Diphyllobothrium latum* mature segment



Uterus

Ovary

C.G.P

Testes

Vitelline glands

## *Diphyllobothrium latum* egg

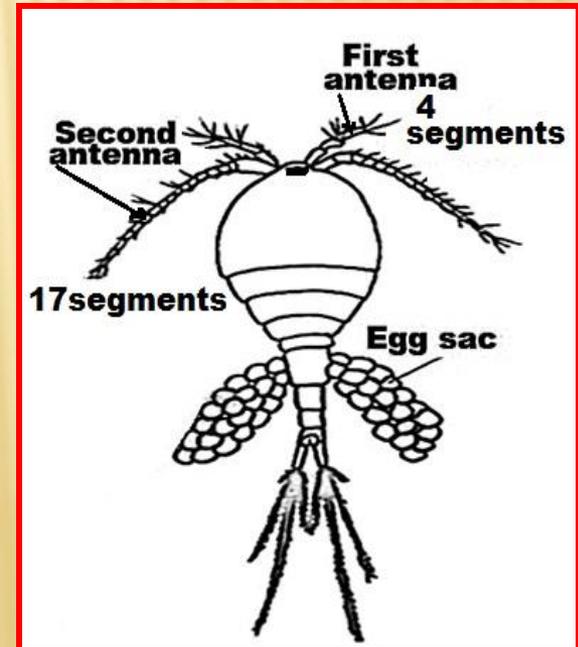
- **Size** : 70×45 μm
- **Shape** : Oval.
- **Shell** : **Thick** and **operculated**.
- **Color** : Yellowish brown.
- **Content** : **Immature** (ovum and yolk cells).



➤ **Coracidium** : Onchosphere larva with ciliated epithelium containing hexacanth embryo.

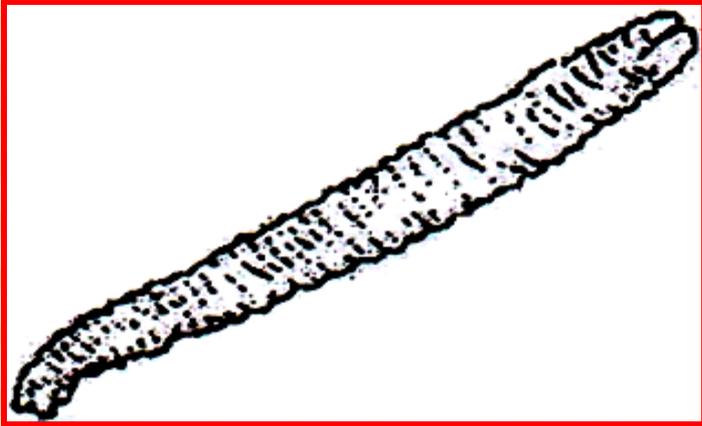


**Cyclop**: 1<sup>st</sup> I.H of *Diphyllobothrium latum* containing proceroid larva.



# Larvae of *Diphyllobothrium latum*

## Plerocercoid (I.S)



Solid larva with striated  
body found in 2<sup>nd</sup> I.H  
(Salmon fish).

## Procercoid



Solid elongated larva,  
with posterior spherical  
end having 6 hooks found  
in 1<sup>st</sup> I. H (Cyclop).

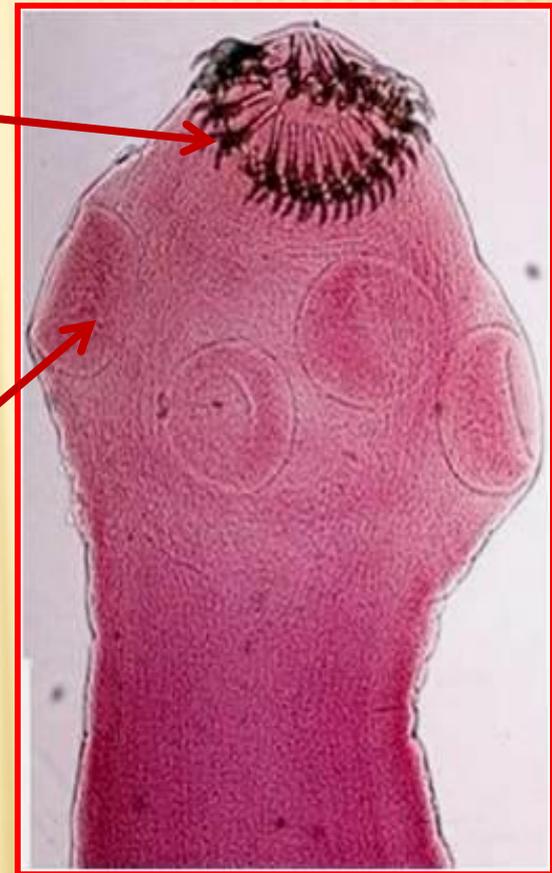
***Taenia saginata*  
scolex**

***Taenia solium*  
scolex**



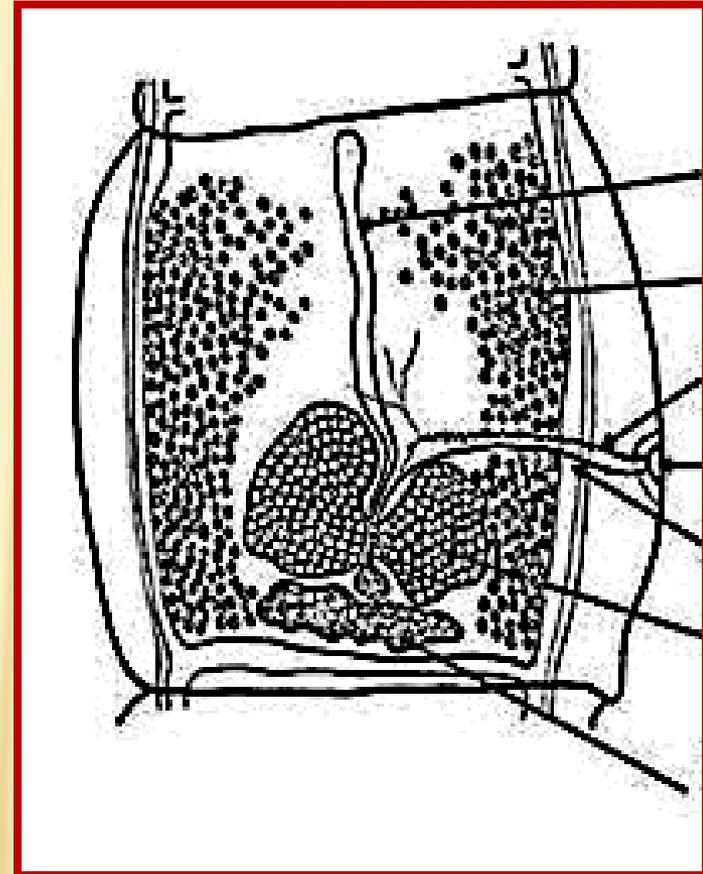
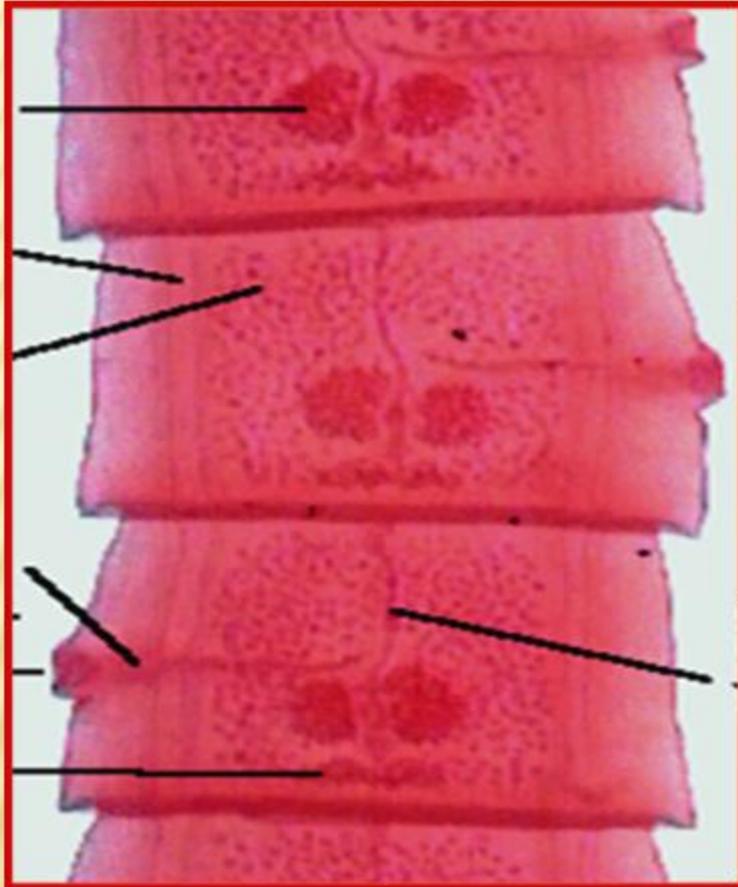
**Rostellum  
with 2 rows  
of hooks**

**Suckers**



**Globular, with 4 cup shaped suckers at the  
angles of the head**

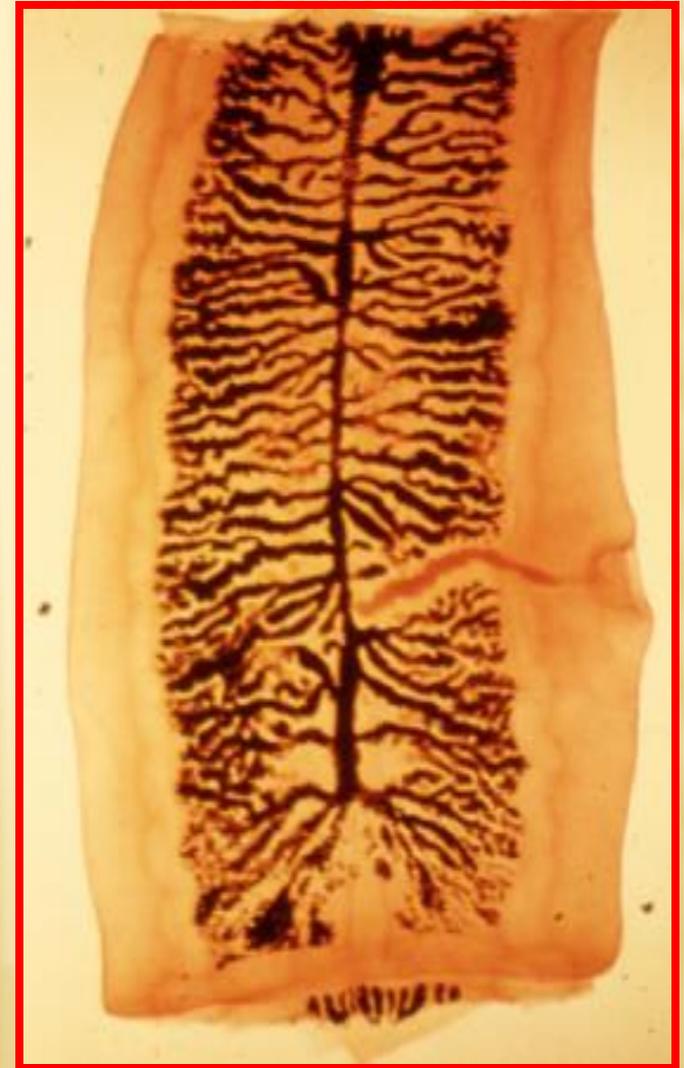
# Mature segment of *T. saginata*



**Squarish in shape**  
**Contains male & female genital systems**

## Gravid segment of *T. saginata*

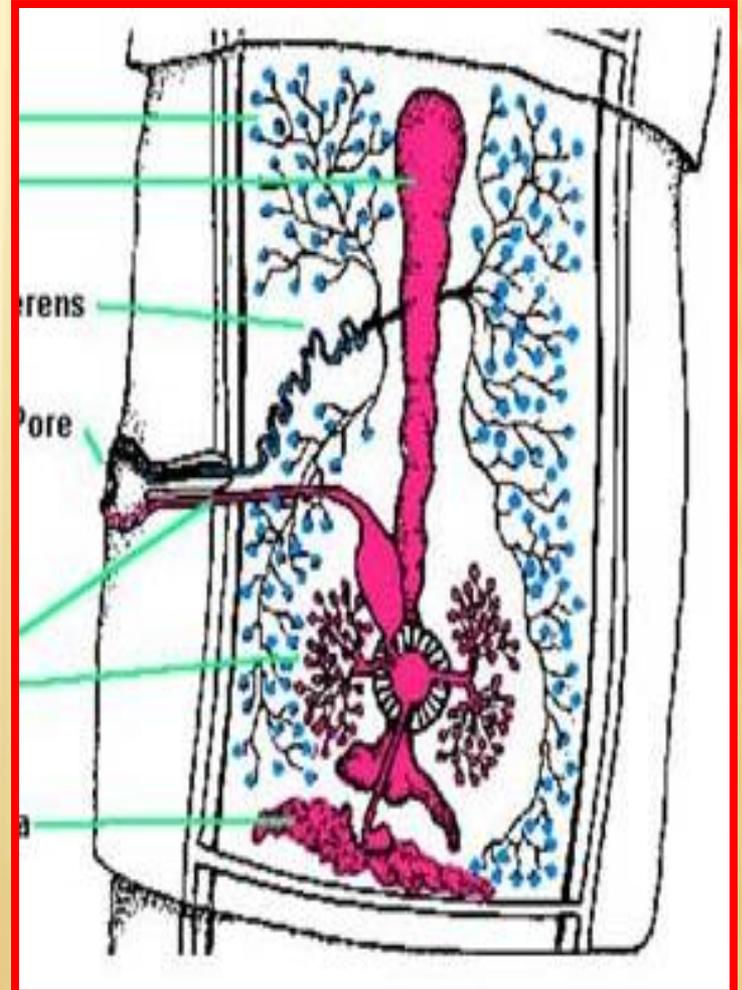
- Longer than broad
- Uterus with 15 - 30 (18) lateral branches on each side
- Full of eggs.
- Detached **singly** out of the anus (with feces or actively migrate).



# Mature segment of *T. solium*

**Strobila** : About 1000 segments:-

- Immature segments.
- Mature segments :
- Similar to *T. saginata* except :-
  - \*Smaller.
  - \*Testes : Fewer.
  - \*Ovary : Trilobed.



# Gravid segment of *T. solium*

- **Gravid segments :**
- **Similar to *T. saginata* except:-**
  - 1 - Smaller.**
  - 2 - Uterus: About 9 lateral branches on each side.**
  - 3 - Segments detach in groups.**



## Egg of *Taenia* (D.S)

**Size :** 30- 40  $\mu\text{m}$  in diameter.

**Shape :** Spherical.

**Shell :** Thick, radially striated.

**Color :** Yellowish brown.

**Content :** Mature hexacanth embryo.

Egg of *T. solium* similar to *T. saginata* but it is the infected stage to human causing cysticercosis



## **Cysticercus bovis of *T. saginata* (I.S)**

- **Cystic larva of *T. saginata* found in beef.**
- **Lined with germinal epithelium & contain fluid.**
- **Has invaginated scolex with 4 suckers (without hooks).**



## **Cysticercus cellulosa of *T. solium* (I.S)**

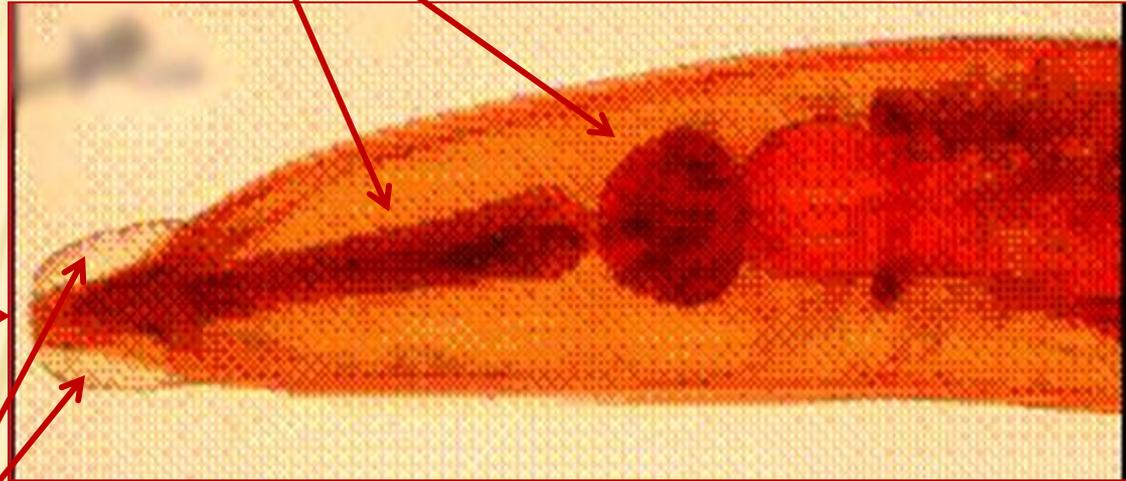
**Similar to cysticercus bovis, but detected in pork and the invaginated scolex carries 4 suckers, rostellum and hooks.**



**Anterior end of *Entrobium vermicularis*  
adult**

**Double bulbed  
oesophagus**

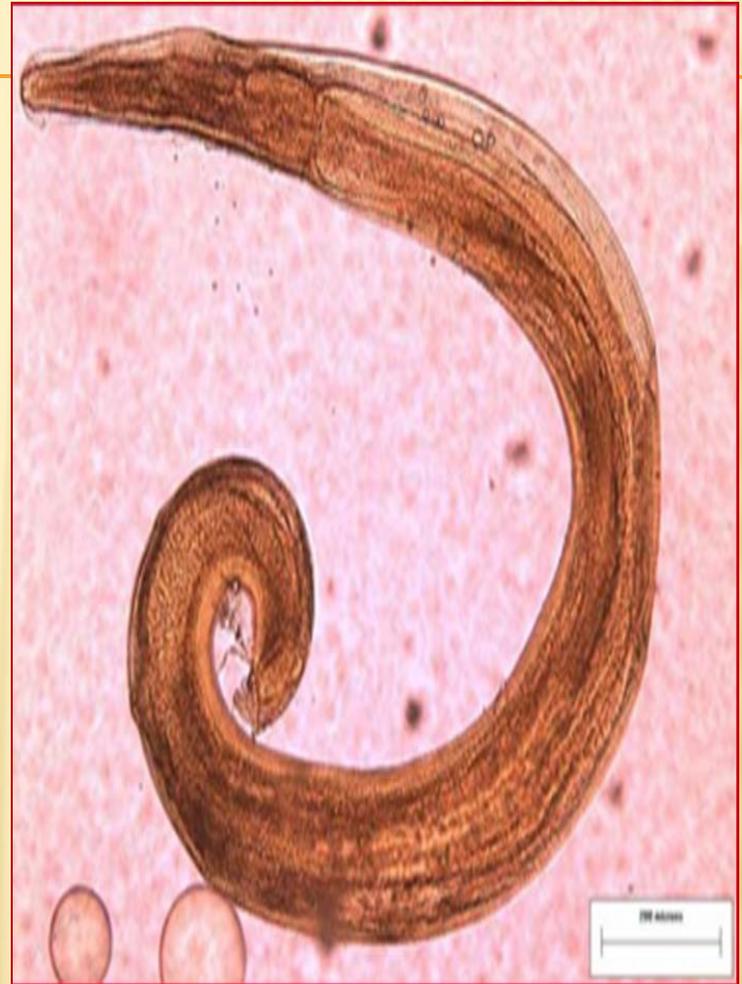
**lips**



**Cephalic  
alae**



***Entrobium vermicularis***  
**female**



***Entrobium vermicularis***  
**male**

# *Entrobium vermicularis* egg

**(D.S & I.S)**

- **50 x 25  $\mu\text{m}$  in diameter**
- **Oval.**
- **D-shaped or planoconvex**
- **Thick shell.**
- **Translucent**
- **Mature (fully developed larvae).**



## ***Capillaria philippinensis* egg**

❖ (D.S)

- 40 x 20 um
- Barrel shape with small and flat bipolar plugs
- Thick shell.
- Yellowish brown
- Immature



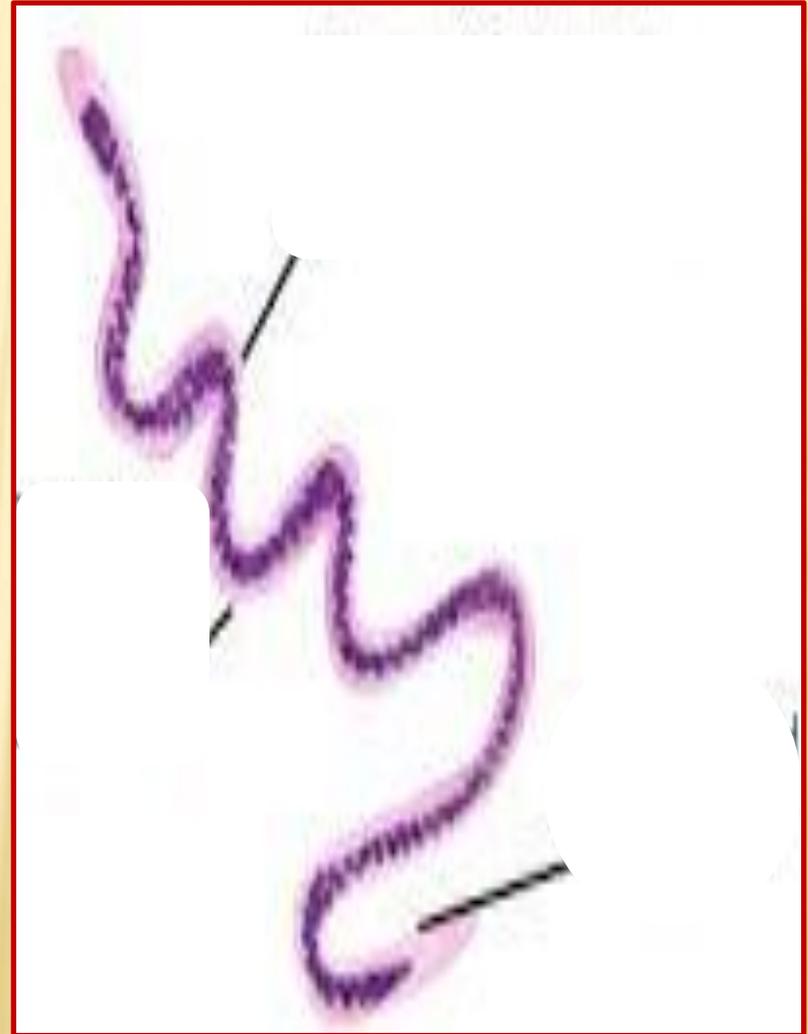
## Microfilaria of *Wuchereria bancrofti* (D.S)



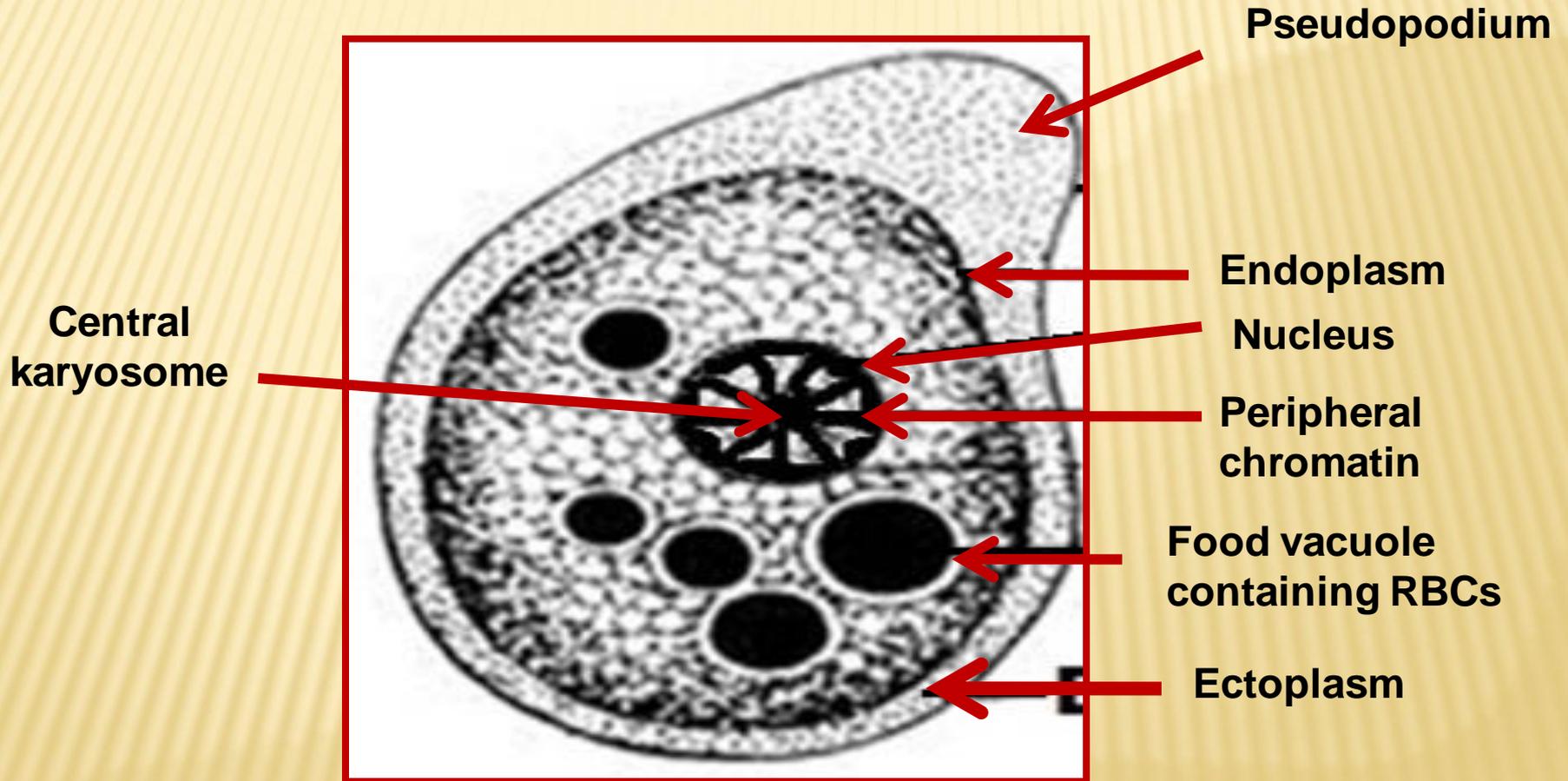
**Microfilaria** is 250  $\mu\text{m}$  x 8  $\mu\text{m}$ , body with smooth curves, loose sheath with deeply stained nuclei with empty ant. and post. ends & **have nocturnal periodicity (10 p.m. to 2 a.m).**

## Microfilaria of *loa loa*

- ❖ 250 x 8 um
- ❖ Tight sheath
- ❖ Tail end full of nuclei
- ❖ Angular curves
- ❖ Appears in blood only in  
daytime (between 10 A.M. &  
2 P.M.) [diurnal periodicity].

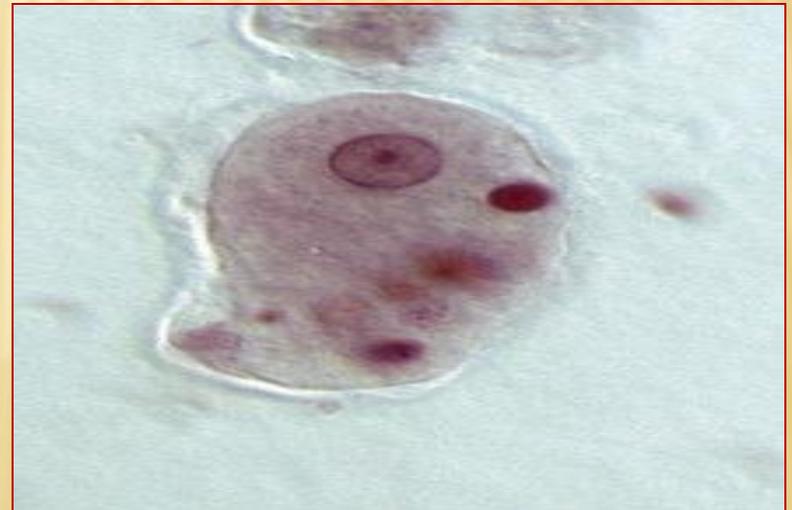
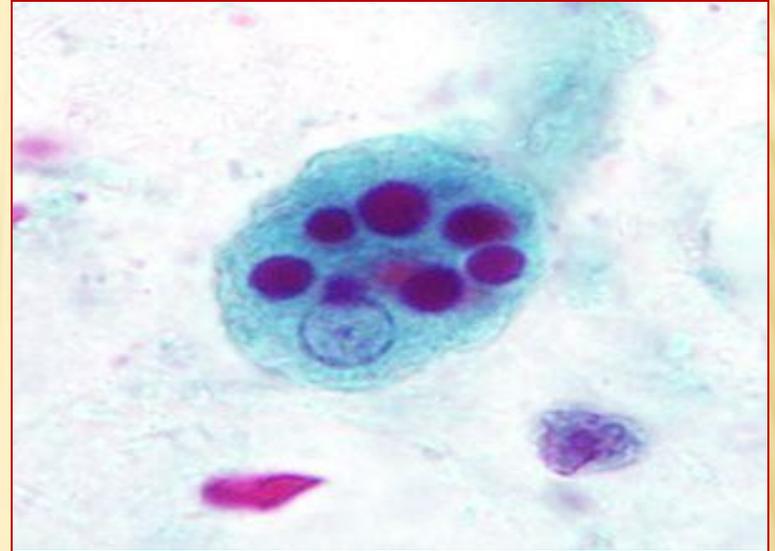


# *Entamoeba histolytica* Trophozoite



# *Entamoeba histolytica* Trophozoite

- 20 um
- **Cytoplasm:** differentiated
- **Pseudopodia:** finger shaped
- **RBCs:** present
- **Bacteria:** absent
- **Nucleus:** one with small central karyosome & fine regularly arranged peripheral chromatin granules
- **Motility:** active

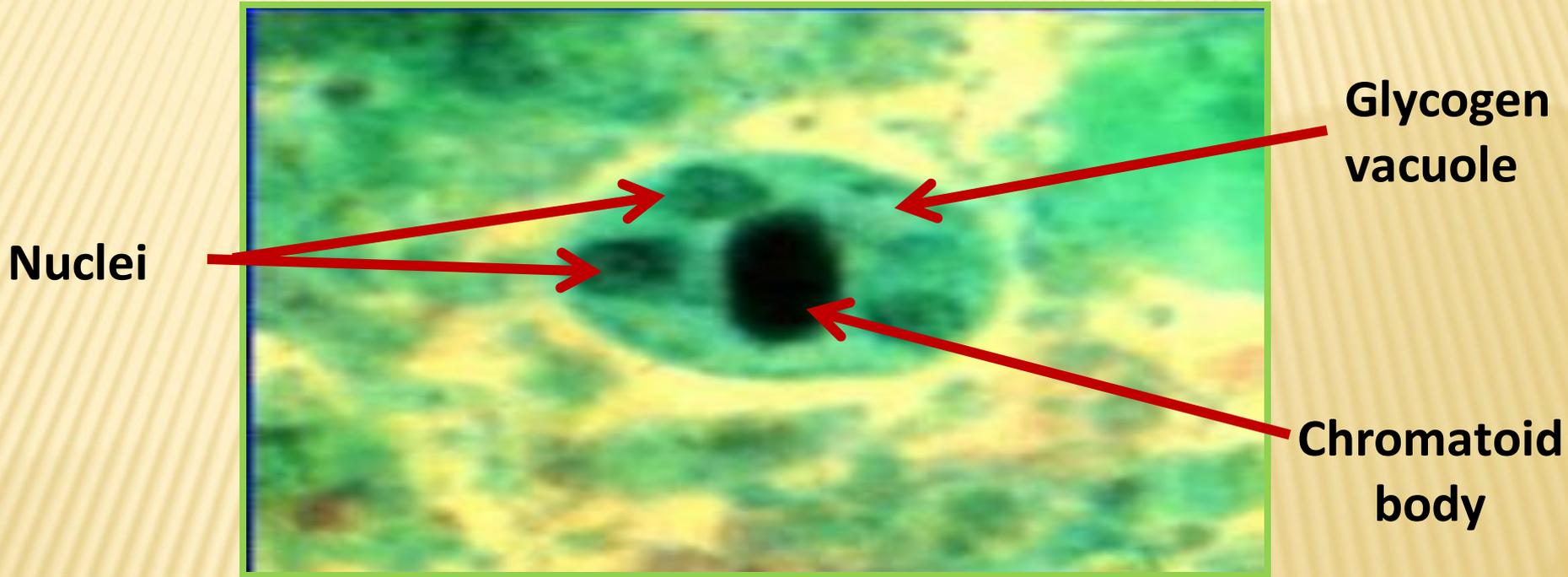


## *Entamoeb coli* trophozoite

- 25  $\mu\text{m}$
- **Cytoplasm:** not differentiated
- **Pseudopodia:** Short & blunt.
- **RBCs:** absent
- **Bacteria:** present
- **Food vacuoles :** present
- **Nucleus:** one with large eccentric karyosome & coarse irregularly arranged peripheral chromatin granules
- **Motility:** sluggish

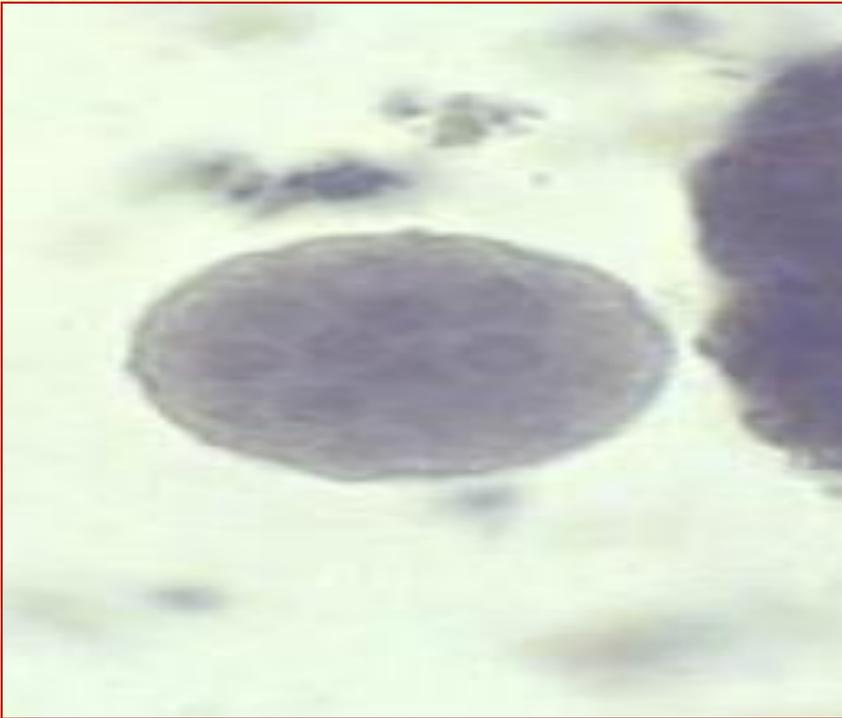


*Entamoeba histolytica*  
mature cyst

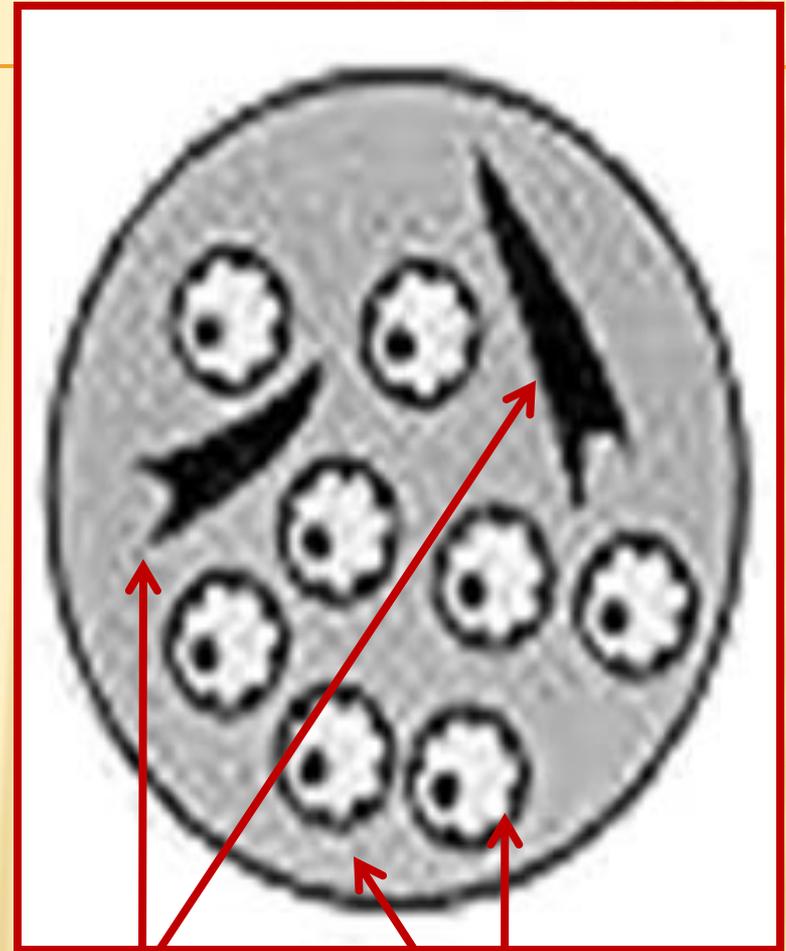


- D.S & I.S
- 15  $\mu$ m
- Rounded with thick cyst wall.
- Contain 4 nuclei.
- One chromatoid body.
- Glycogen vacuole.

# *Entamoeba coli* cyst



- 20 um
- Rounded.
- Contain 8 nuclei
- Bundle or splinter shaped chromatoid bodies.



Chromatoid  
bodies

Nuclei