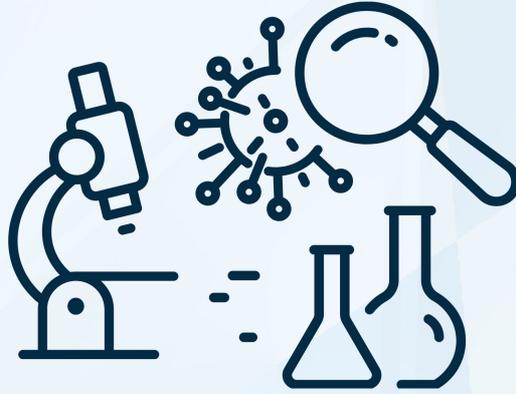




Doctor 2022

أثر

Medicine - MU



Microbiology

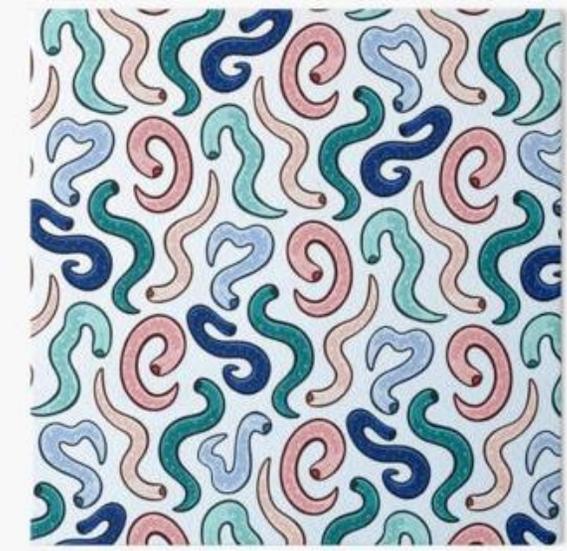
Done by :

Farah almflh

Ashraqat Husni

Abdallah Hasanat





Have a body cavity contain fluid which contain the system of nematode

Introduction to nematodes

Enterobius vermicularis

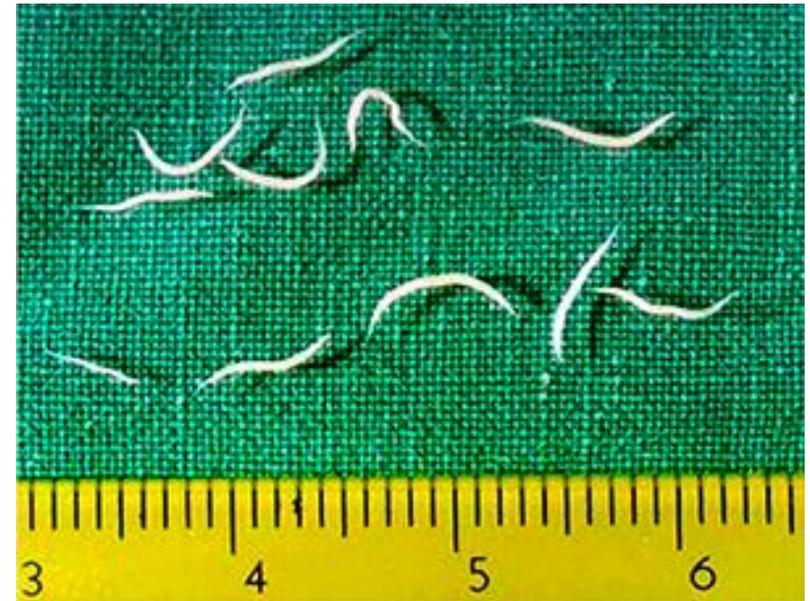
By

Professor Dina Moustafa Abou Rayia

Medical Microbiology and Immunology Department

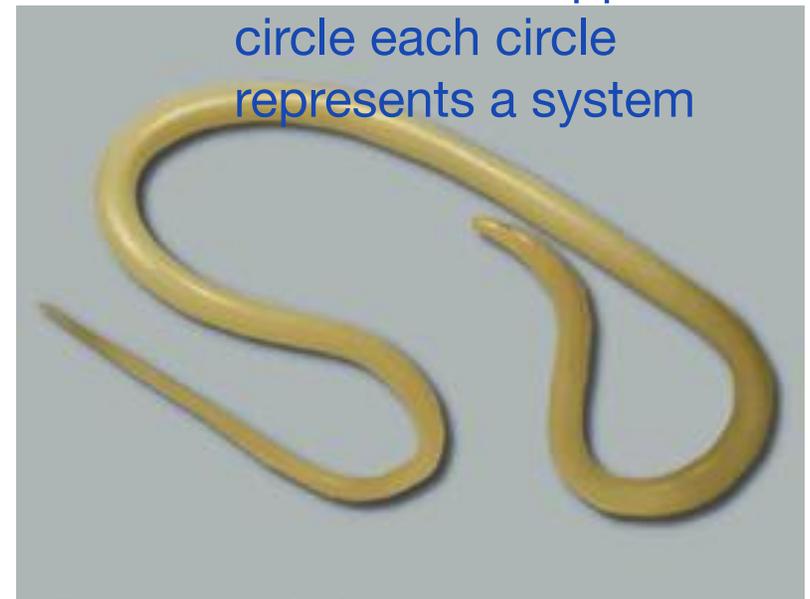
General Characters:

- Bilaterally symmetrical.
- Rounded, elongate unsegmented with variable size.
- Separate sex (males are smaller than females with ^{Coiled} curved posterior end while the females have straight posterior end).
- Has body cavity, complete alimentary tract and tubular genital system, simple excretory and nervous system.



Coiled, male

When we cut the cross section it will appear as circle each circle represents a system



Rounded, Cylinder

Systems of the body

Open of the valva help in differentiate between nematode

We found in that some nematode have double reproductive system (2 set of genital system) but 2 genital system open in one valva

Important to differentiate between the nematodes

Digestive:

Mouth



Esophagus



Intestine



Anus

Remove waste

Male:

Testis



Vas deference



Seminal vesicle



Ejaculatory duct

Posterior
Coiled end



Female:

Ovary



Oviduct



Uterus



Vulva

(Accessory copulatory organs)

Sets of gent.

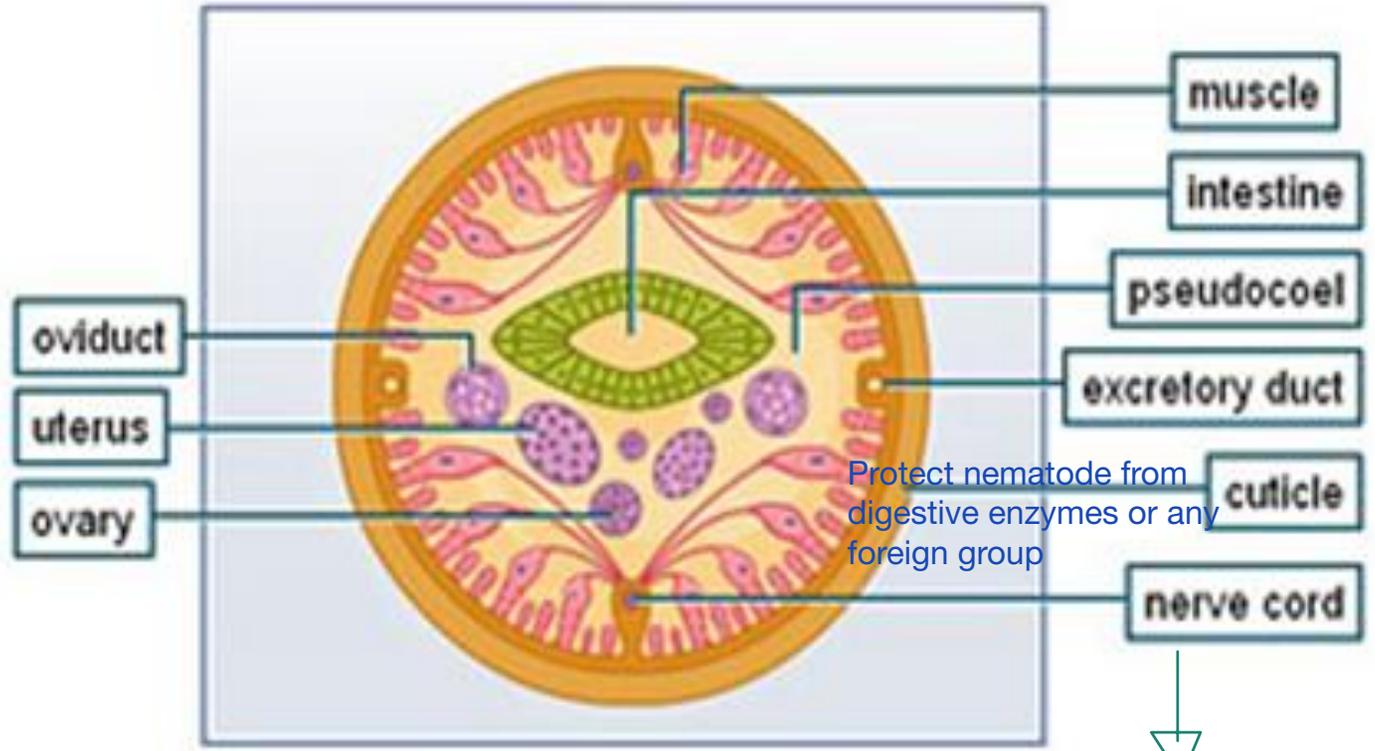
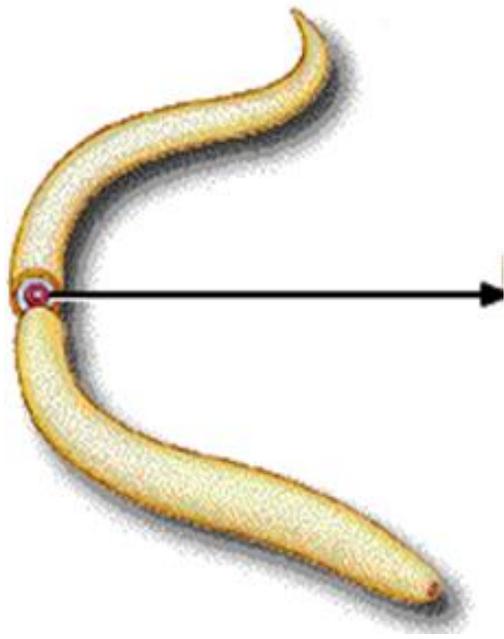
Clasping of male with Female

(تشبث)

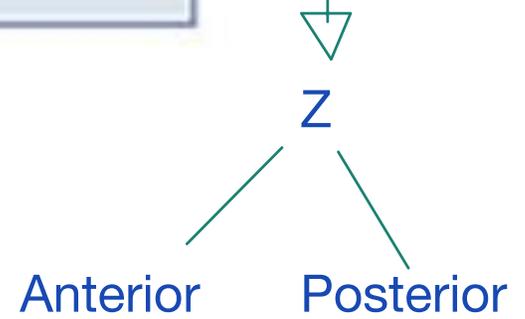
- different from nematode to other



Body wall & cavity

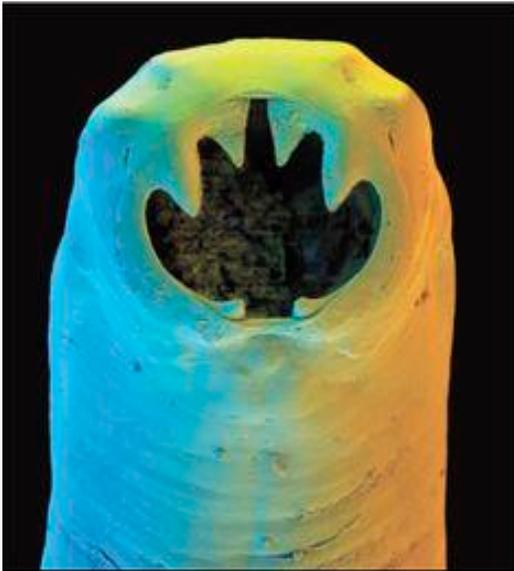


Protect nematode from digestive enzymes or any foreign group

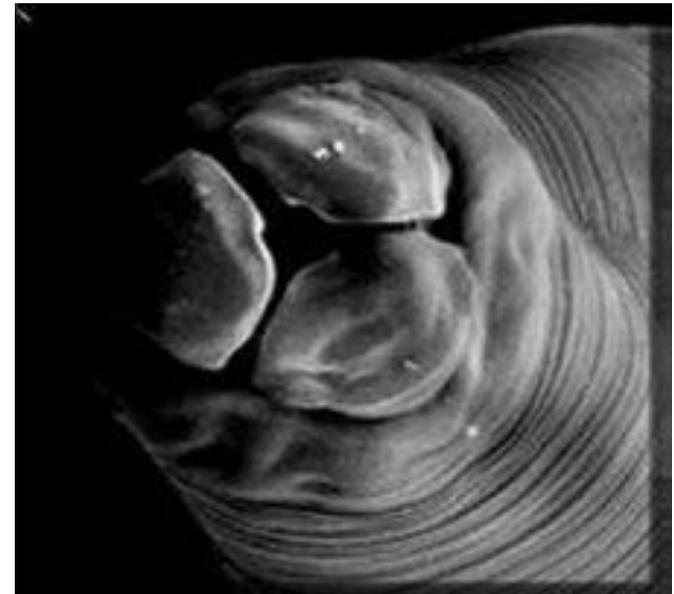


The digestive system

The mouth



Equipped with teeth or plates

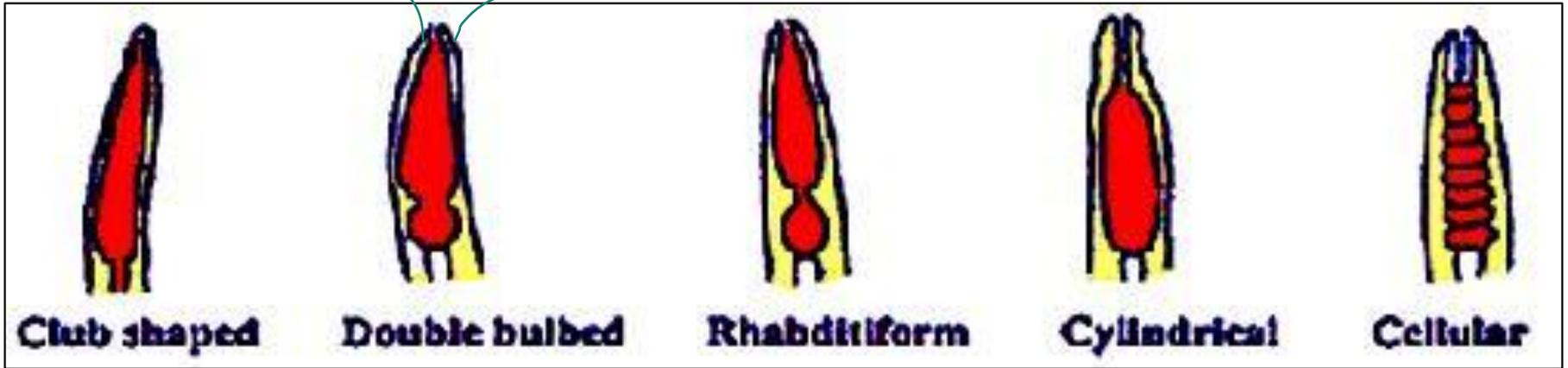


Surrounded by lips or papillae

The oesophagus

Anterior: club shaped

Posterior : spherical



Club shaped

Double bulbed

Rhabditiform

Cylindrical

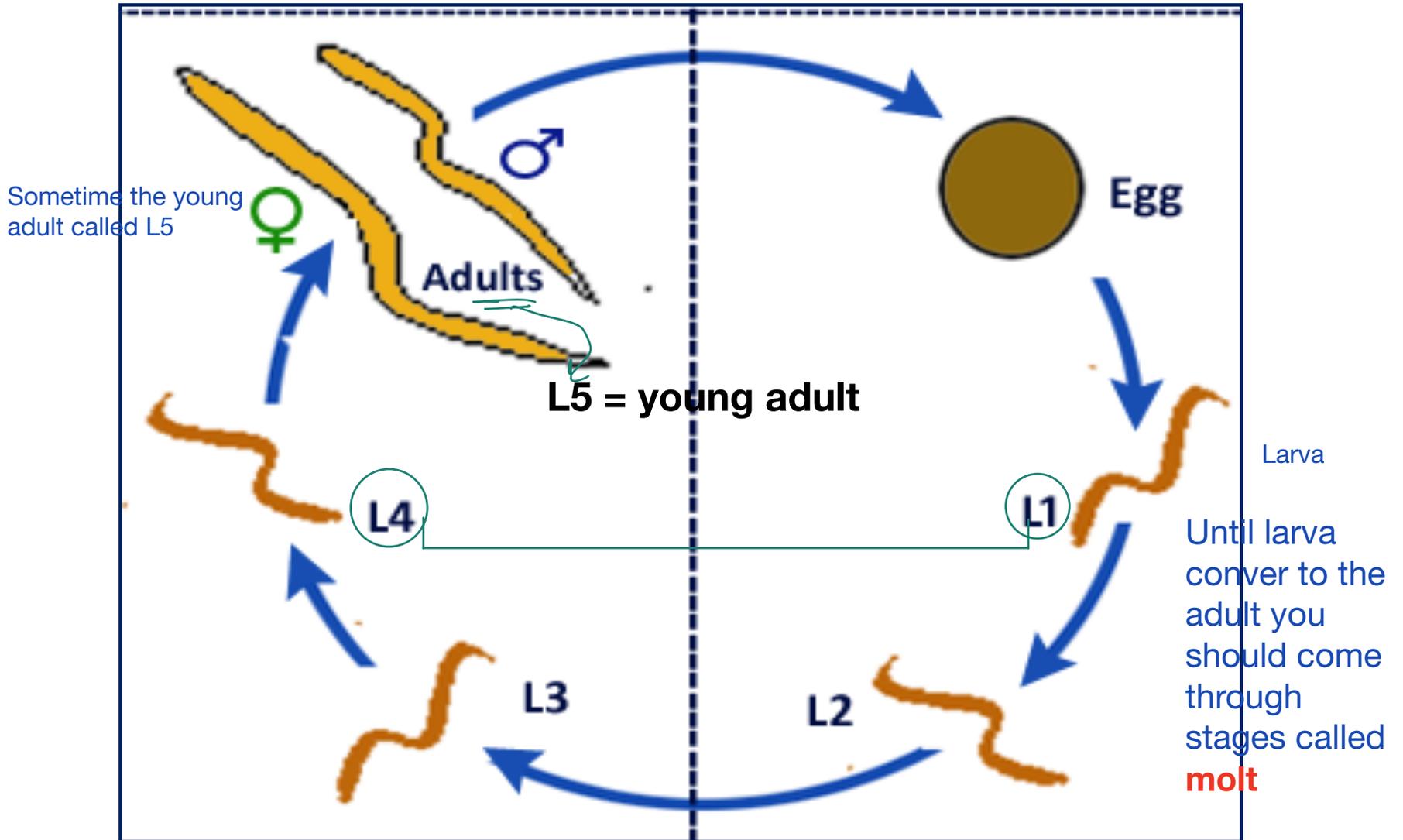
Cellular

مضرب التنس

Straight

Row of cells above each other

Life Cycle



Molting :remove the cutical &synthesis new cuticle

the most common
parasite

Enterobius vermicularis

Pin worm

الديدان الدبوسية
Oxyures

Enterobius vermicularis (Oxyuris-pin worm)



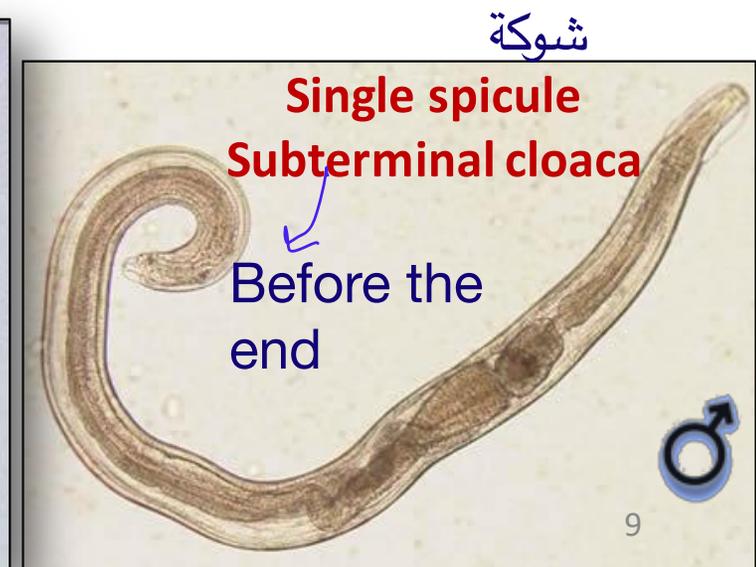
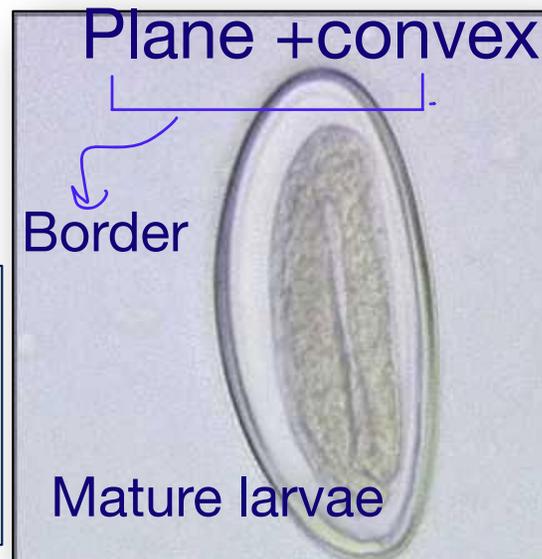
- **Geographical distribution:** Cosmopolitan

White – cylindrical

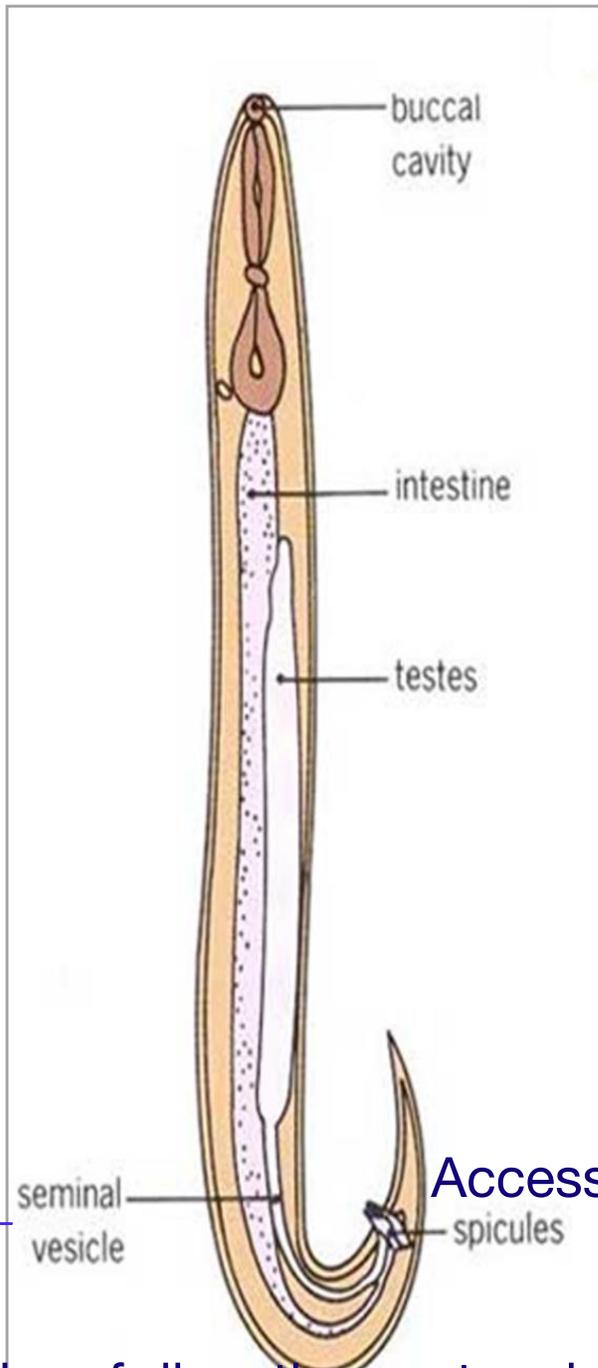
Two sets of genitalia



- Double bulbed esophagus
- Two cephalic alae
- Three lips

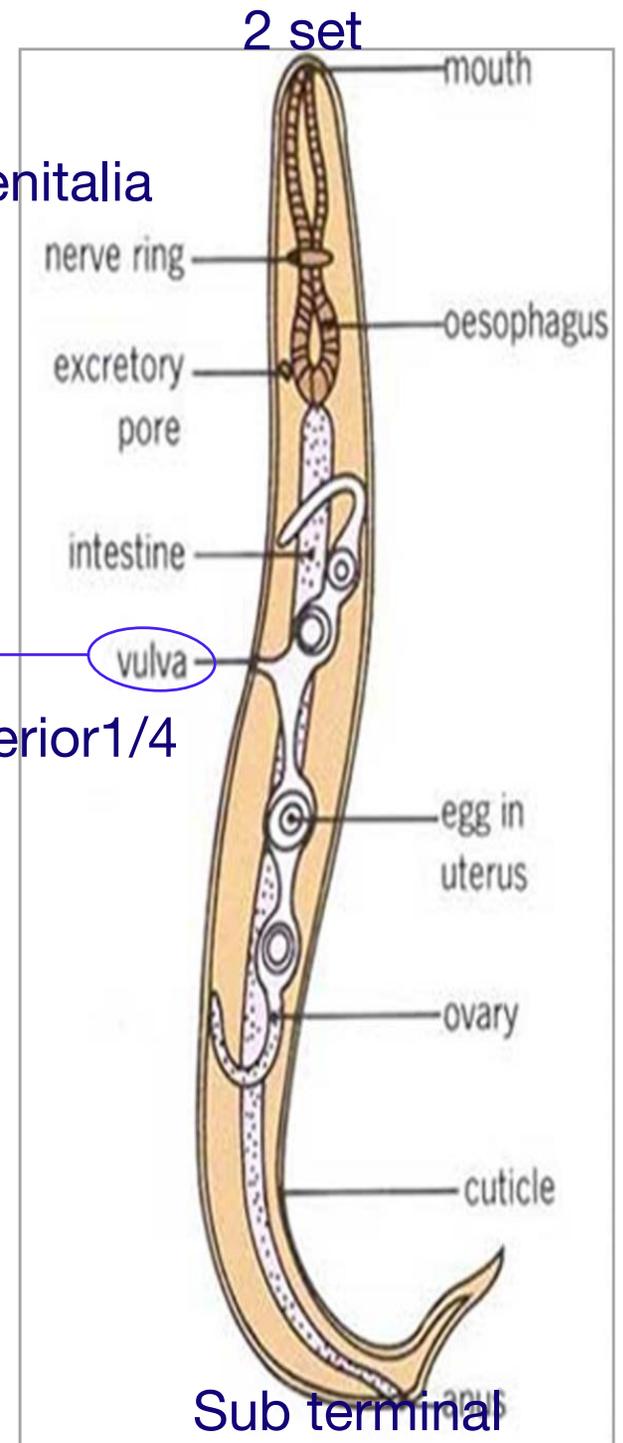


Size: 50x20 μ
Shape: Planoconvex (D shape)
Colour: Translucent
Content: Mature larva



Common is 2 sets of genitalia

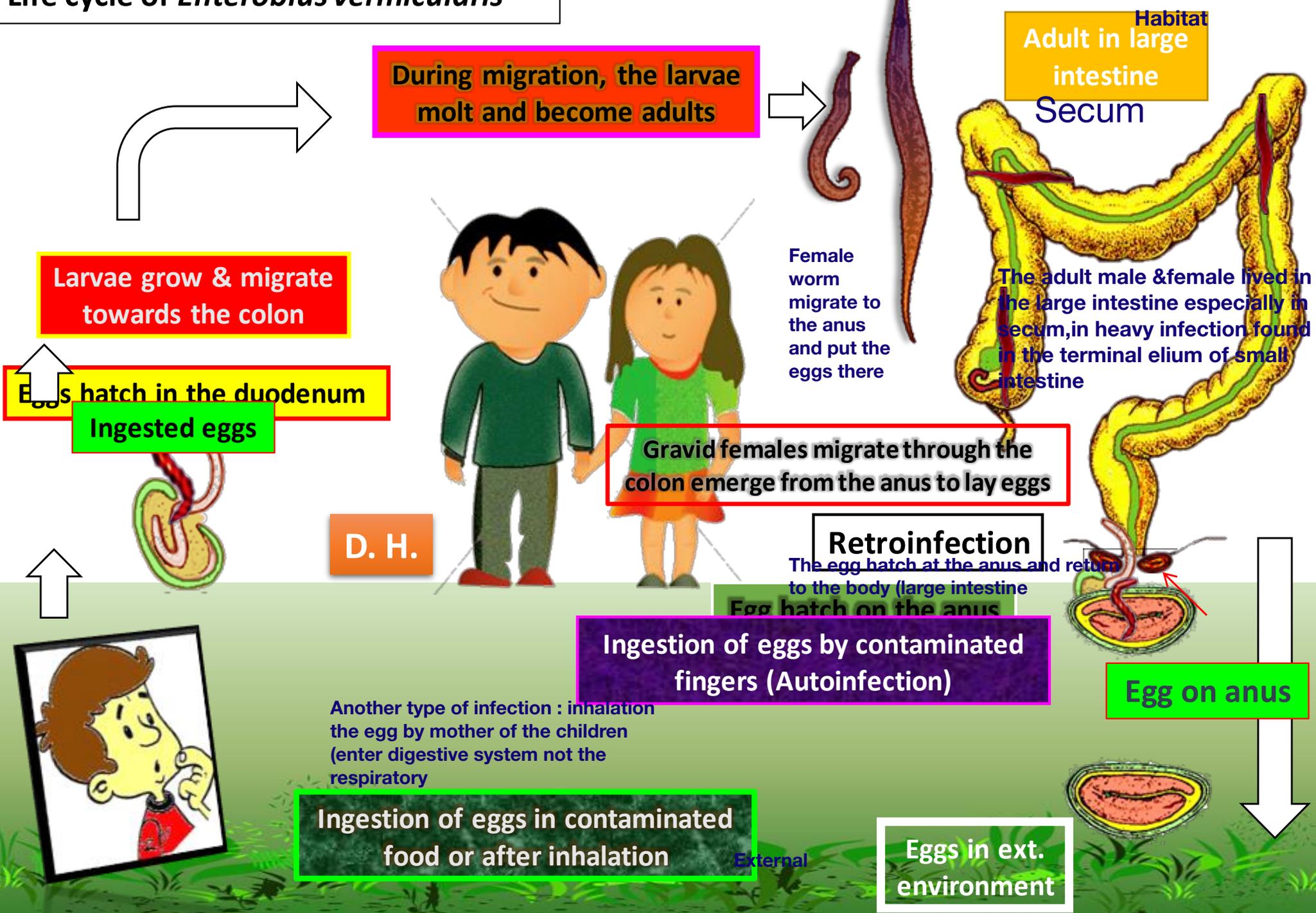
in junction between anterior 1/4 & posterior 3/4



Tube of digestive system join tube of reproductive system in the end

Life cycle of *Enterobius vermicularis*

In human only. (no animals)



Enterobius vermicularis



- **Habitat:** Large intestine especially caecum and adjacent parts of ileum and appendix.
- **Hosts:**
 - D.H: Man
- **Diagnostic stages:**
 - Eggs
 - Adults Very common
- **Infective stage:** Mature embryonated egg containing larva
- **Mode of infection:**
 - Autoinfection (retro-infection-external autoinfection)
 - Ingestion of contaminated food
 - Inhalation of eggs in dust.

Enterobius vermicularis



Clinical aspect:

- Due to the migration of worms, they cause perianal, perineal & vaginal itching (pruritis) worsens at night and may cause urinary tract inflammation.
- Insomnia, restlessness and nocturnal enuresis. *تبول لا إرادي*
- Worms in the appendix can cause appendicitis.

Prevention and control:

- Treating all members of a family in which infection has occurred.
- Washing hands before eating.
- Children wear tight underwear to prevent scratching of perianal skin during the night.

Treatment

مرهم أبيض

- White precipitate ointment **????**
- Albendazole

Laboratory diagnosis:

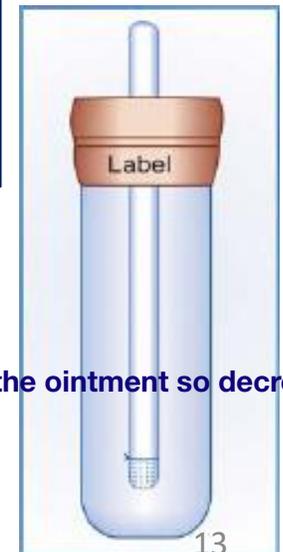
- Finding eggs from perianal skin using cellulose adhesive tape or NIH swab.
- Finding eggs and adult worms in the faeces.
- Eggs could be detected in urine.

Function :

Decrease the itching

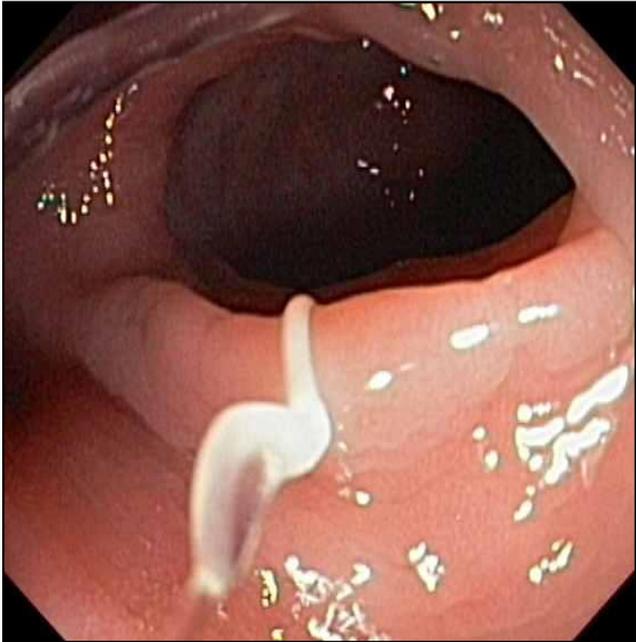
Prevent deposition of the eggs

Kill the female adult by eating the ointment so decrease the infection





E.V. adult in perianal region



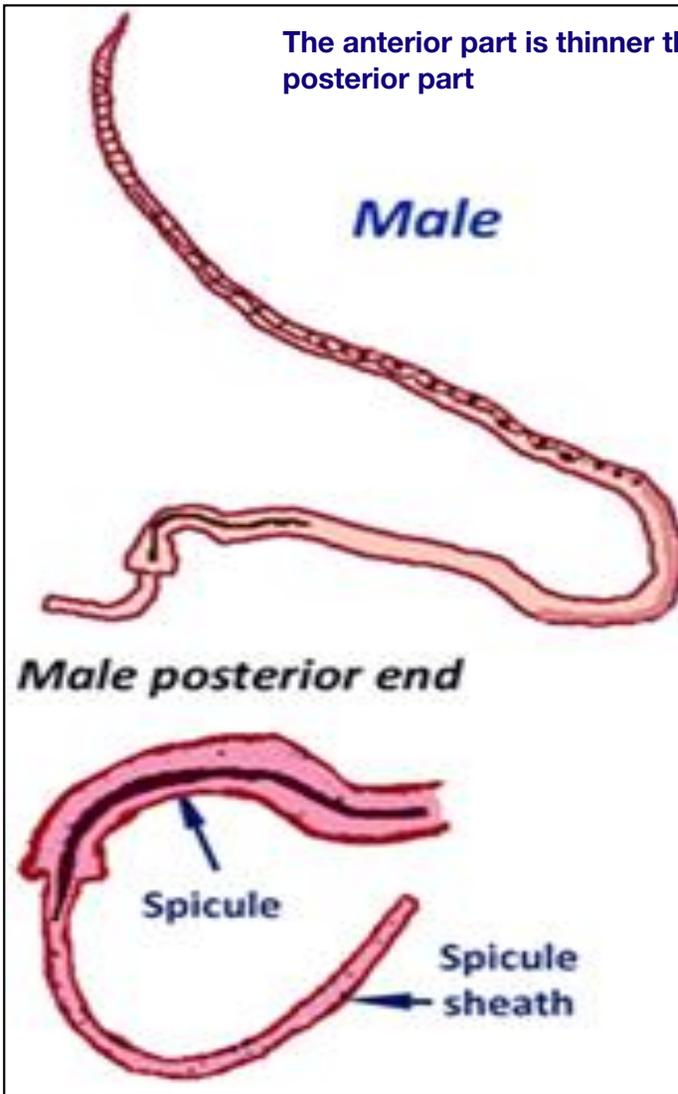
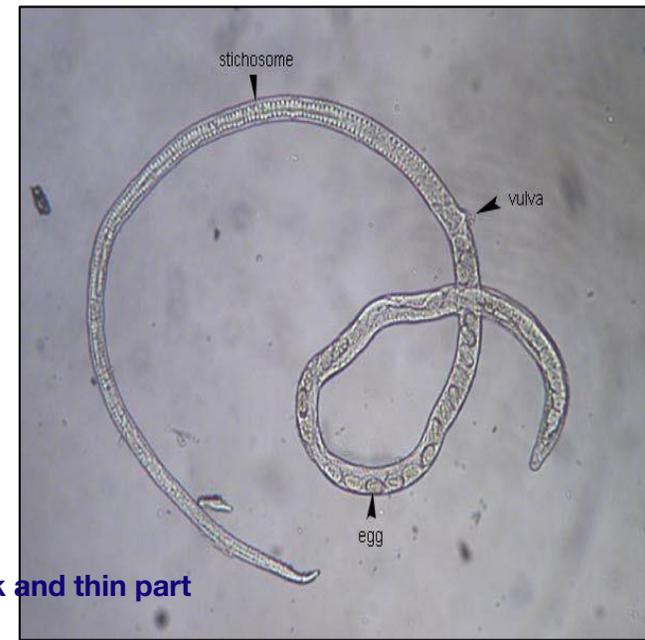
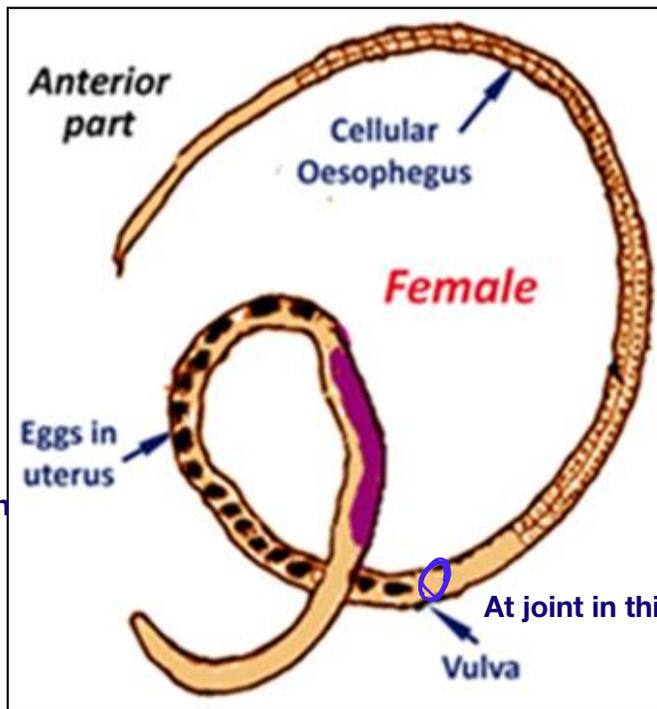
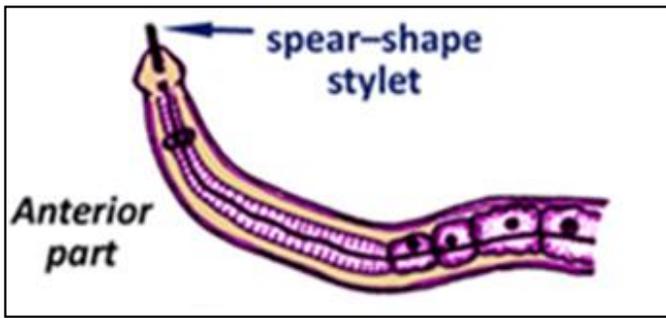
E.V. By colonoscopy



Capillaria philippinensis

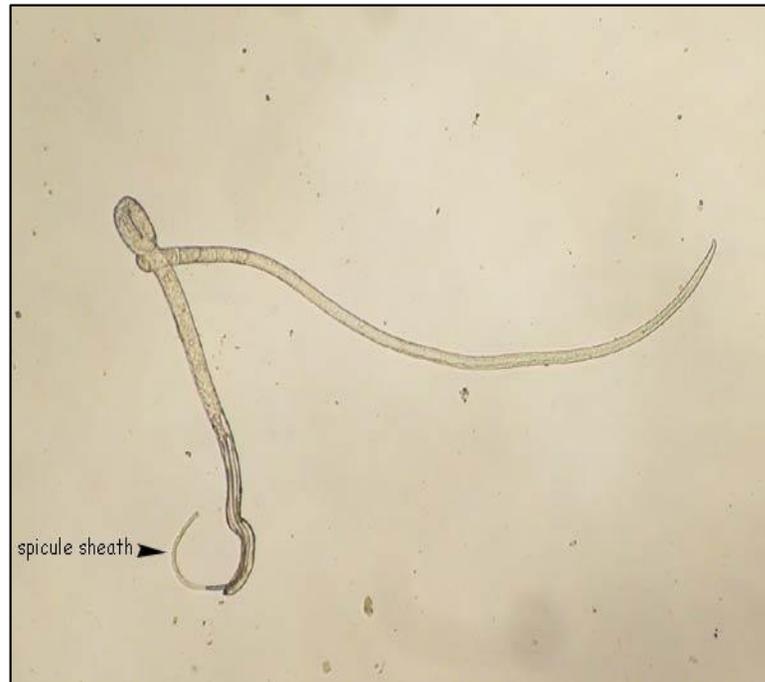
Geographical distribution

- *Capillaria philippinensis* is endemic in the Far East. Sporadic cases have also been found in Egypt, Iran, Spain, and Italy.
- Migratory birds are probably the means by which the infection has spread to other countries



Females are oviparous or larviparous

♀ 3.5 mm



♂ 2.5 mm

Morphology

Immature egg



Egg:

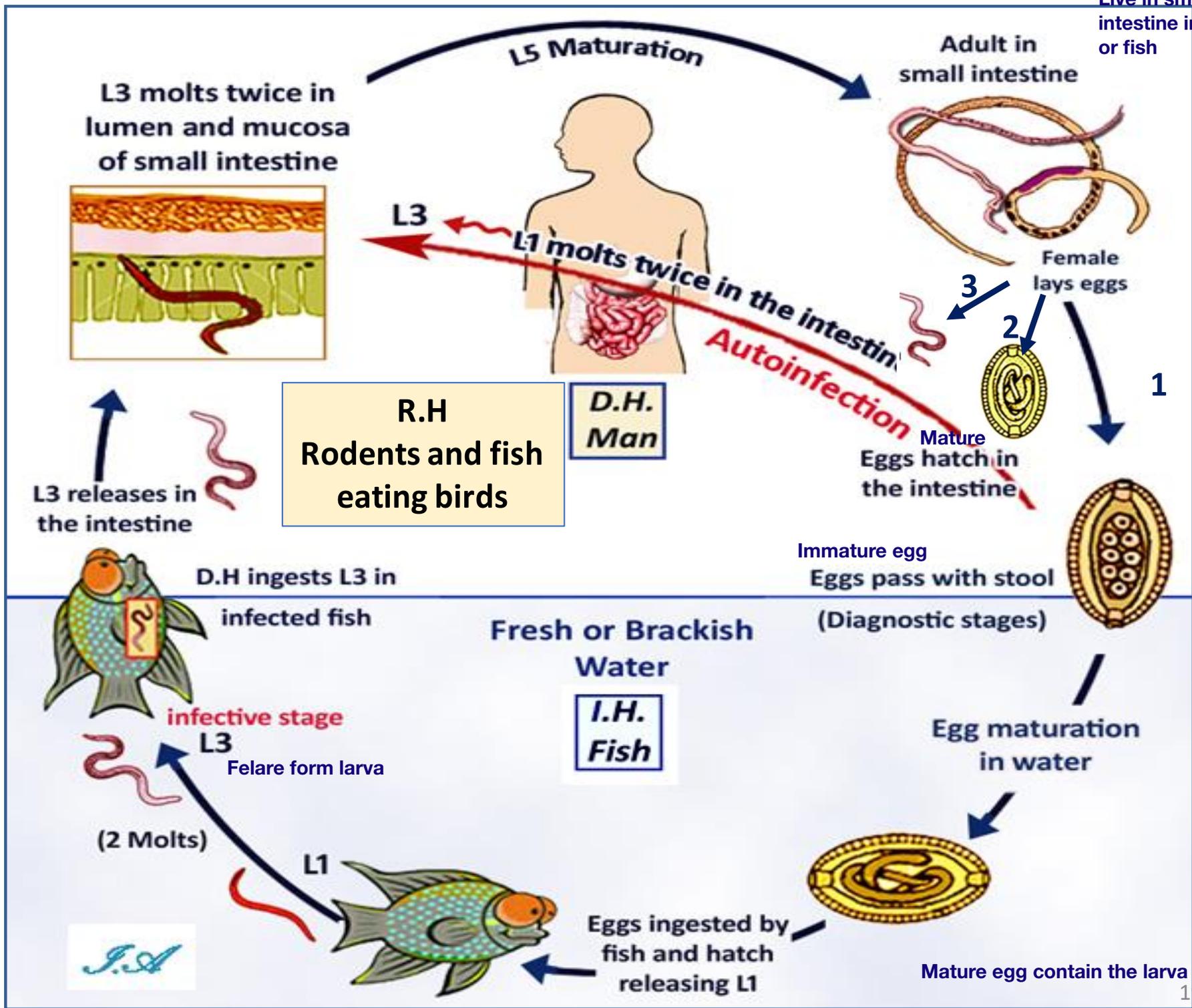
- **Size:** $40 \times 20 \mu\text{m}$.
- **Shape:** Barrel shape with small and flat bipolar plugs.
- **Shell:** Thick.
- **Color:** Yellowish brown.
- **Content:** Immature embryo (one cell stage).

2type of egg :
1-immature (cell stage)
2-mature (larva)



Embryonated egg

Live in small intestine in man or fish



R.H Rodents and fish eating birds

D.H. Man

I.H. Fish

J.S.A

Disease: Capillariasis philippinensis

Extensive epithelial erosions with chronic inflammation ➡ malabsorption of protein, fat, sugars & electrolytes loss ➡ fequent diarrhea (protein lossing entropathy), vomiting, abdominal pain, anorexia, oedema of lower limbs & weight loss.

Death may occur due to:

- Hypokalaemia.
- Heart failure.
- Cerebral oedema.

Capillaria philippinensis is the most virulent helminths of human due to hyperinfection and progressive damage of the mucosa caused by repeated penteration of the mucosa by the adult worm.

Laboratory Diagnosis

Direct methods

- **Stool examination:**
Detection of eggs, larvae and adults.
- **Jejunal aspiration or biopsy for eggs, larvae and adults**

Indirect methods

- **Serological diagnosis.**
- **PCR.** Polymerase chain reaction :test to detect the DNA of the parasite
- **Blood examination:**
Hypoproteinaemia, high eosinophilia.

Treatment

Albendazole
mebendazole

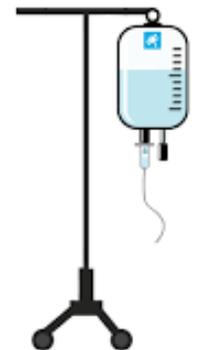
or



☞

Fluid and electrolyte:

(especially potassium)
replacement is usually
needed.



TEST YOUR
Knowledge



- **Mention**

- D.S and I.S in E.V and C.P.

- Complications of E.V and C.P

Vaginal itching (pruritis)
worsens at night and may
cause uti

Hypokalemia
Heart failure
(Fetal)

- **Explain why??**

- White precipitate ointment is used in the treatment of E.V