
بسم الله الرحمن الرحيم

Phylum Platyhelminthes

Phylum Platyhelminthes

- ***General Characteristics***
- Flat worms
- 20000 species
- Flattened , triploblastic
- Unsegmented worms
- Incomplete gut
- Longitudinal nerve cord

Dugesia tigrina (Planaria)

Classification Of Platyhelminthes

- *Four major classes*
- **Turbellaria**
- **Monogenea**
- **Trematoda**
- **Cestoidea**

Class Turbellaria

- Free living, non-parasitic flat worms
- 3000 species
- No specialized cavity
- Incomplete digestive system
- Can regenerate
- Hermaphrodite
- Example: Planarians

Body wall

- Triploblastic
- Epidermis is ciliated
- Mesoderm
- Circular and longitudinal muscles
- Parenchyma cells
- Between longitudinal muscles and gastrodermis
- Endodermis comprise the digestive cavity
- **Rhabdites** : rod like cells
- Adhesive glands
- Releaser glands

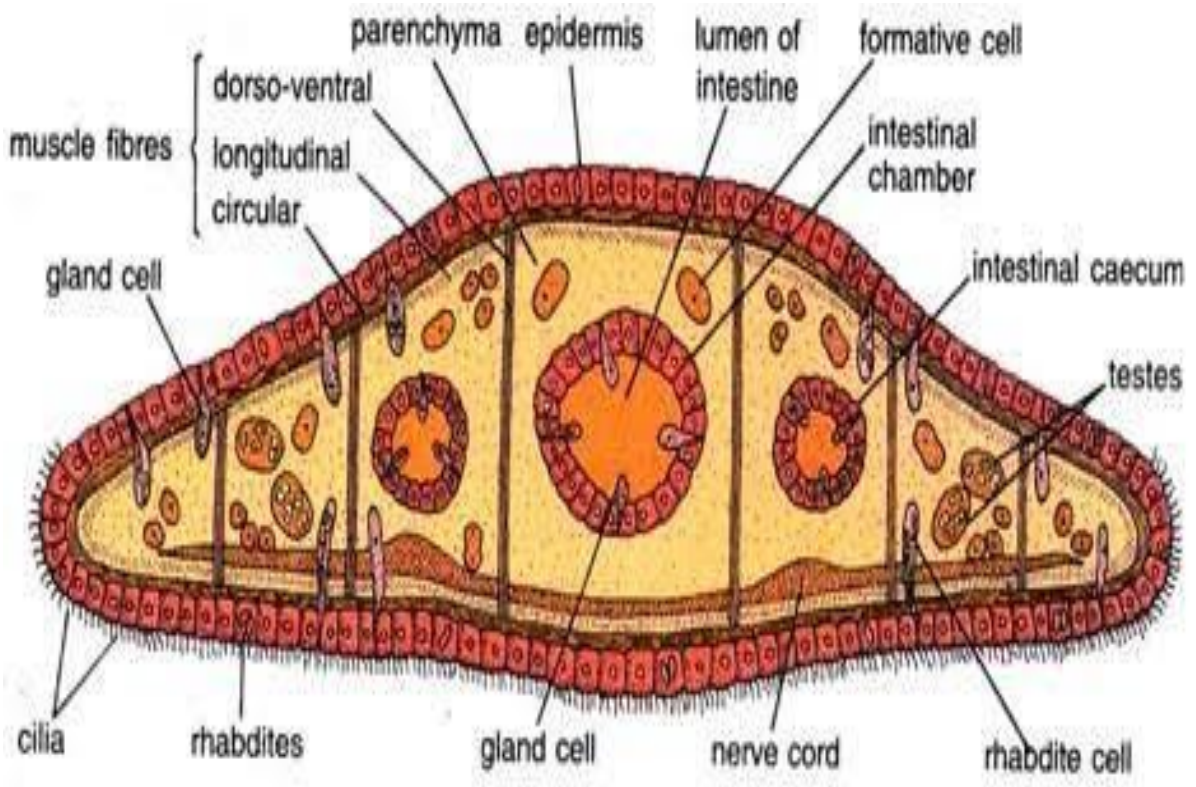


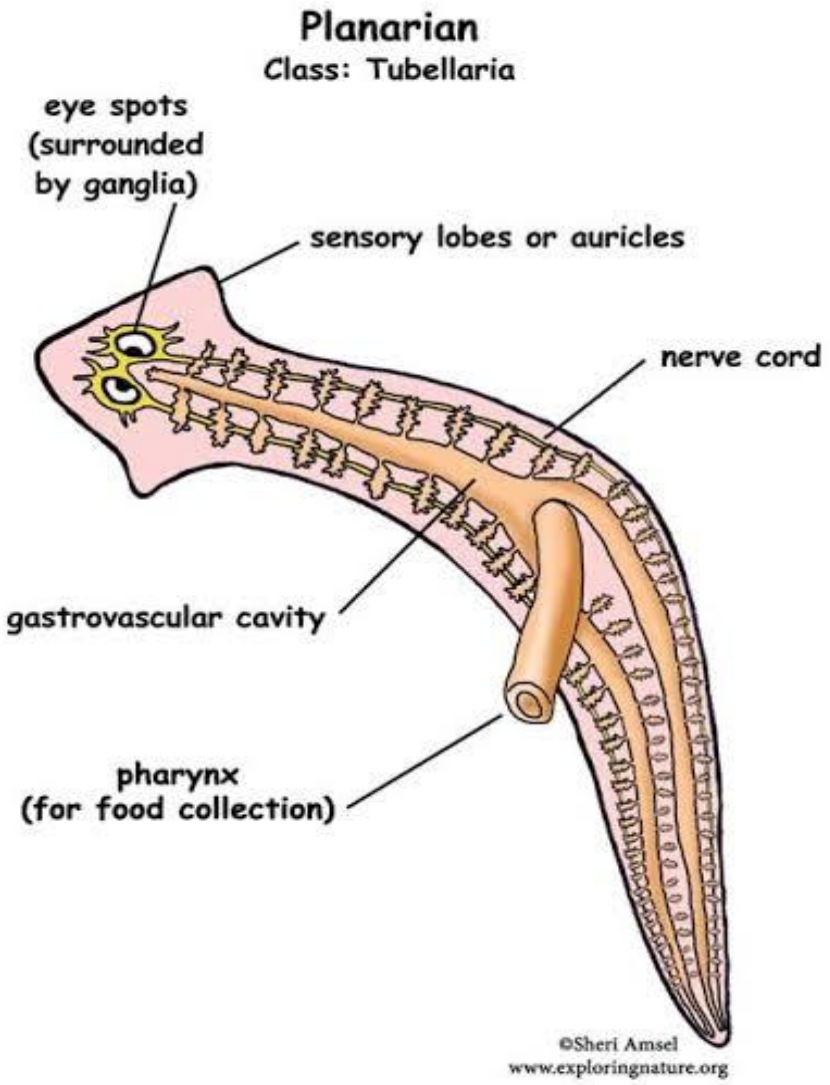
Fig. 39.3. *Dugesia*. Diagrammatic transverse section through the body.

Locomotion

- Use cilia and muscular undulation
- Flattened body enhances its locomotion

Digestion and nutrition

- Lack digestive cavity
- Branched digestive system
- Pharynx acts as ingestive organ
- It is simple ciliated tube developed from folding of muscles
- **Carnivores**
- Feed on small invertebrates
- **Digestion**
- Extracellular digestion



Phylum Platyhelminthes (some systems)
Class Monogenea

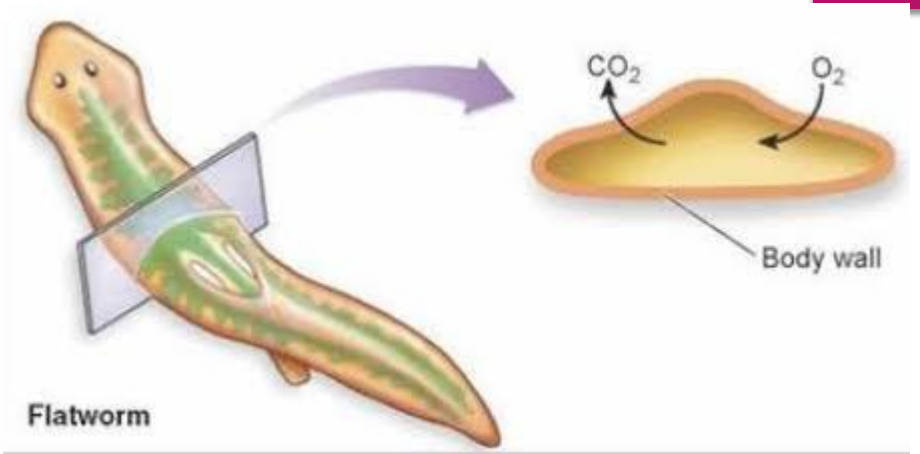
SOFIA

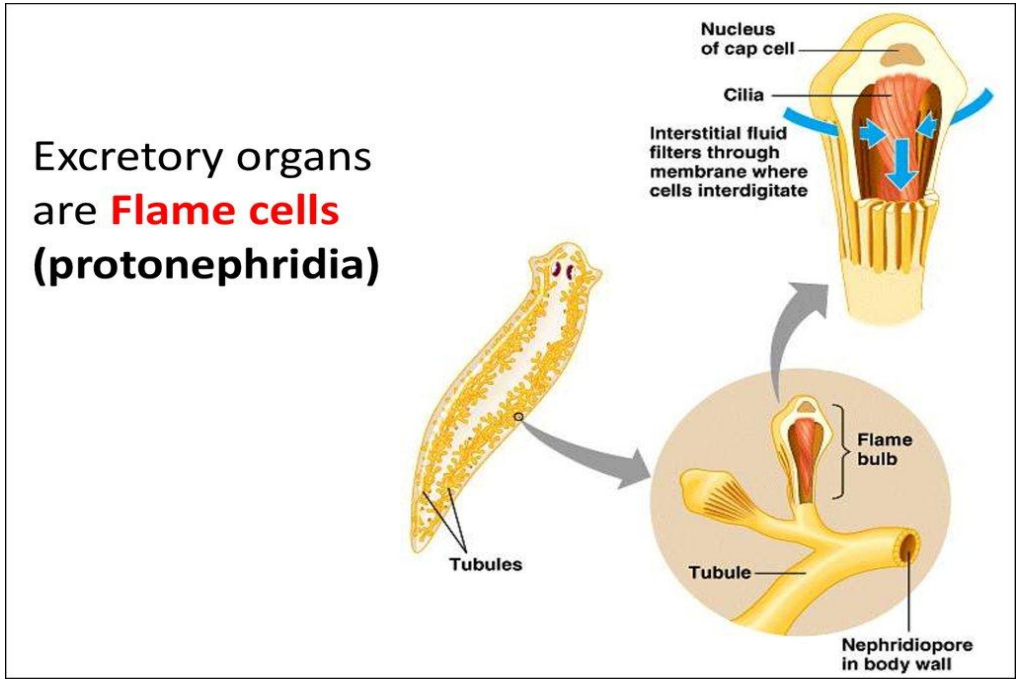
Gaseous Exchange:

- No respiratory organs
- Gases are exchanged by diffusion directly through body wall

Excretion:

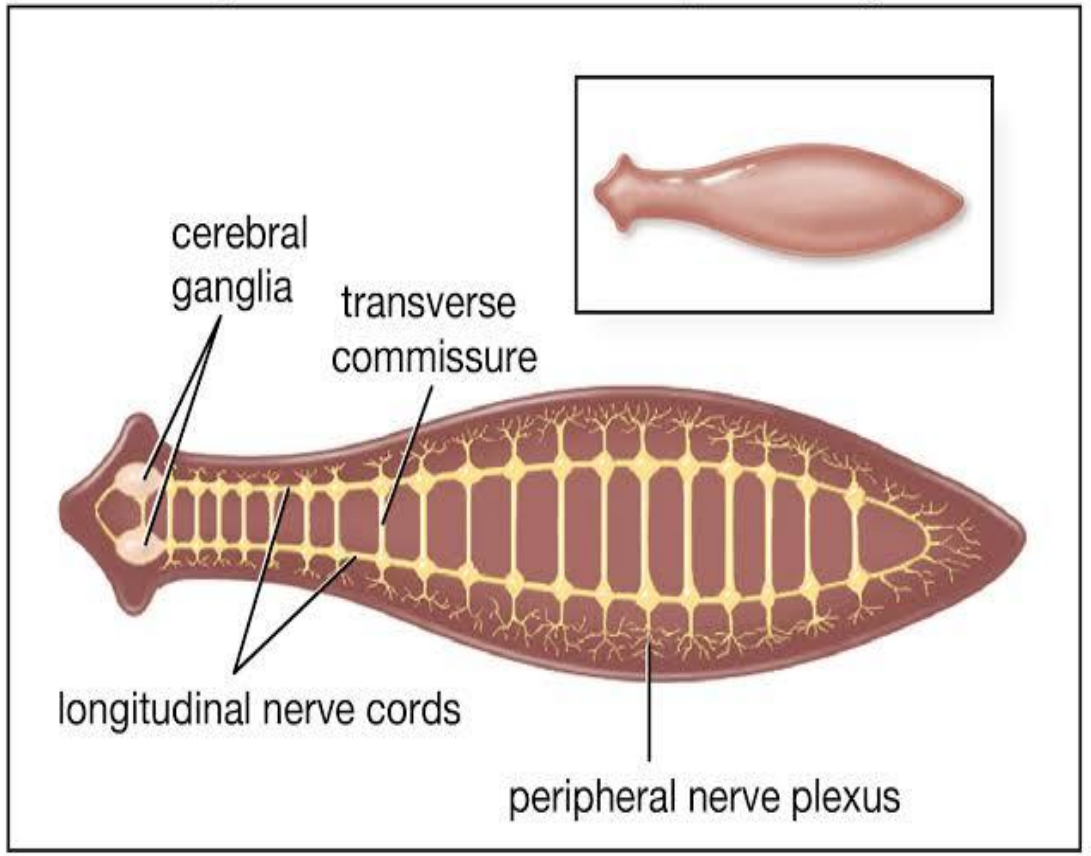
- Protonephridia-network of fine tubules
- Flame cells
- Cilia are present (drives fluid down the tubule)
- Nephridiopore (outside opening)





Nervous system:

- Nervous system is ladder like
- Ganglia are present
- Two nerve cords that run from the ganglia in head along the ventral side
- They also have lobes on the side of their head called auricles

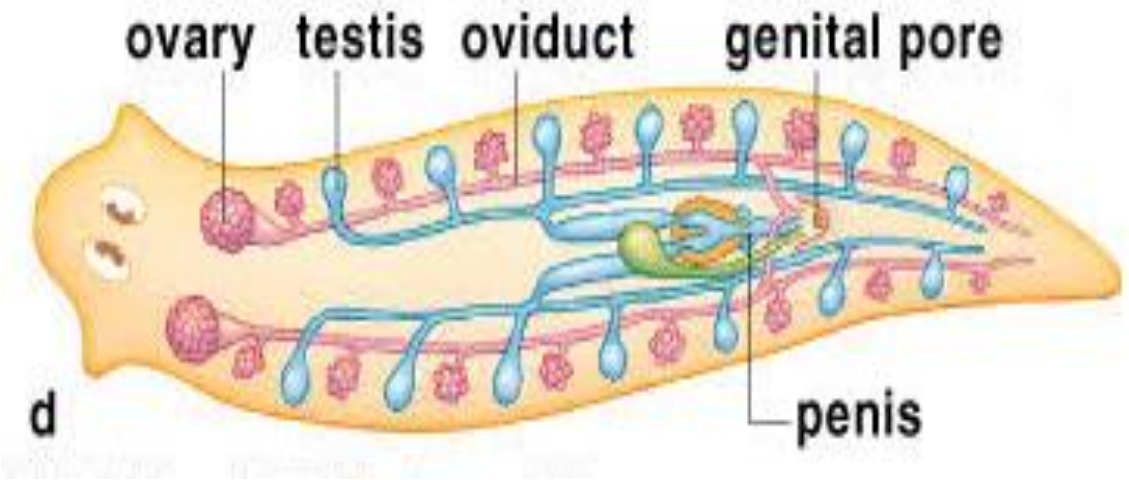


Reproduction and development:

- Reproduce asexually by fission
- Zooids result from fission
- Turbellarians are monoecious

(Male and female reproductive systems are present in one organism)

- Development is direct
- Muller’s larva—free swimming larva in some tubellarians

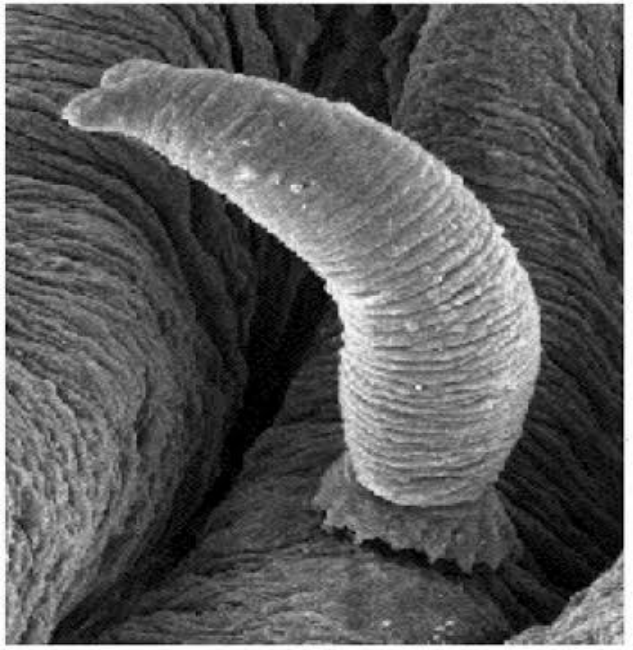


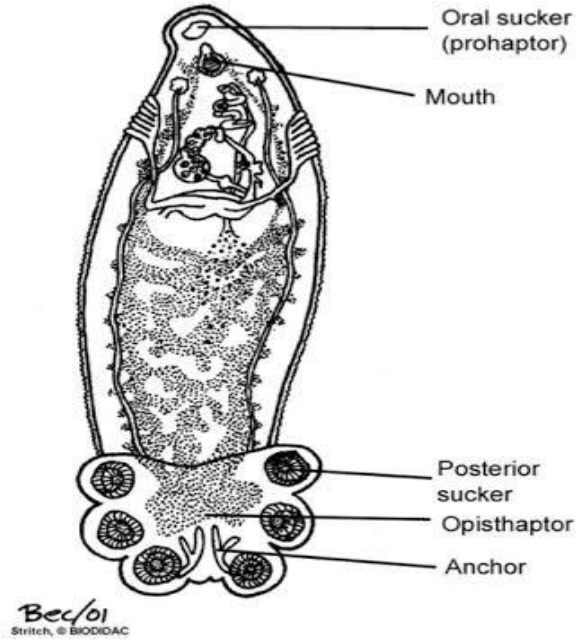
Class Trematoda

RABIA BASRI

Class Monogenea:

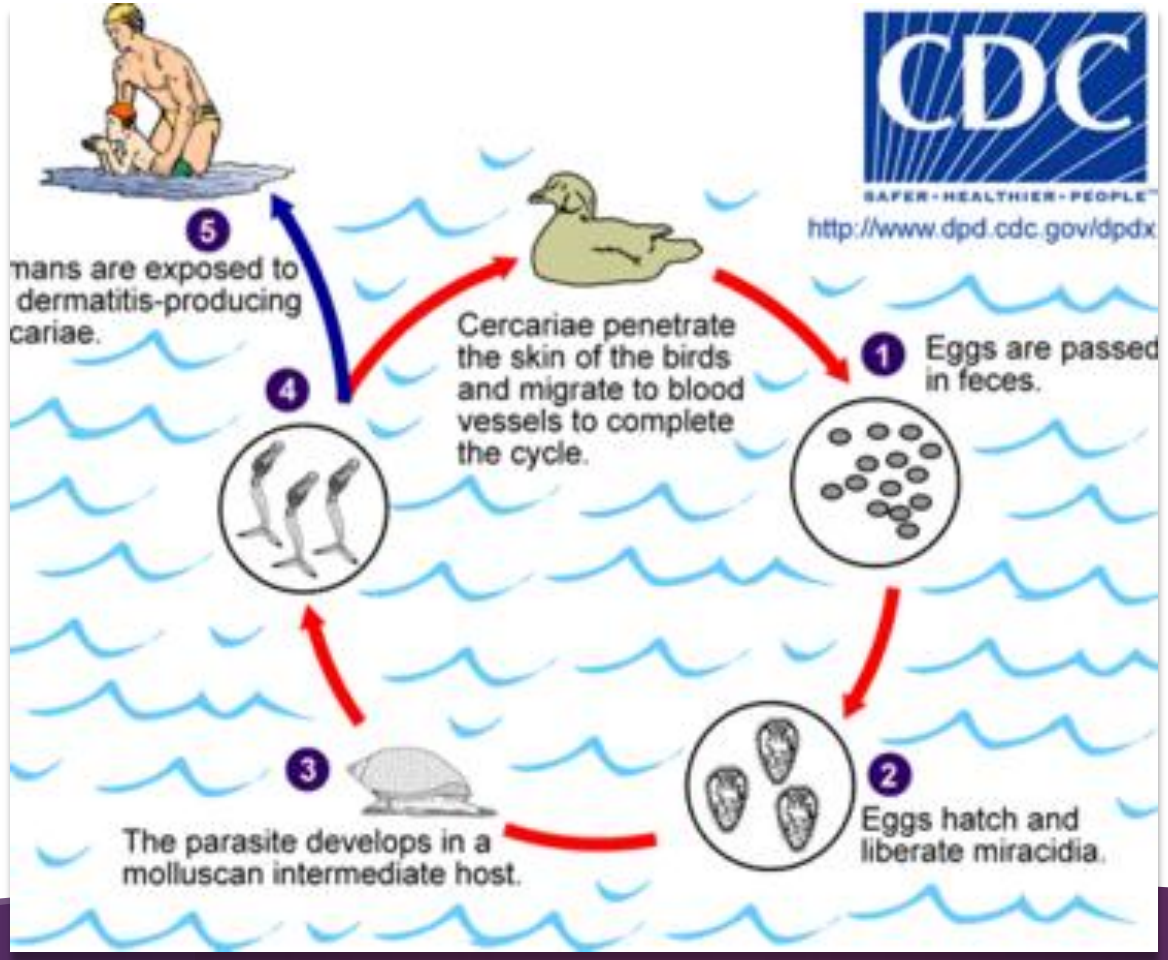
- Only one generation in lifecycle—one adult develops from one egg
- Ectoparasites
- Body covered by tegument
- Posterior hooks with opisthaptor
- Direct life cycle with single host





Class Trematoda

- Flattened dorsoventrally
- Unsegmented body
- Body covered by cuticle
- Organs of fixation: oral sucker, ventral sucker
- Hermaphordite
- Life cycle in two hosts



Life cycle stages of trematodes

- 5 stages from egg to adult

Parasites of Human

Fasiola hepatica

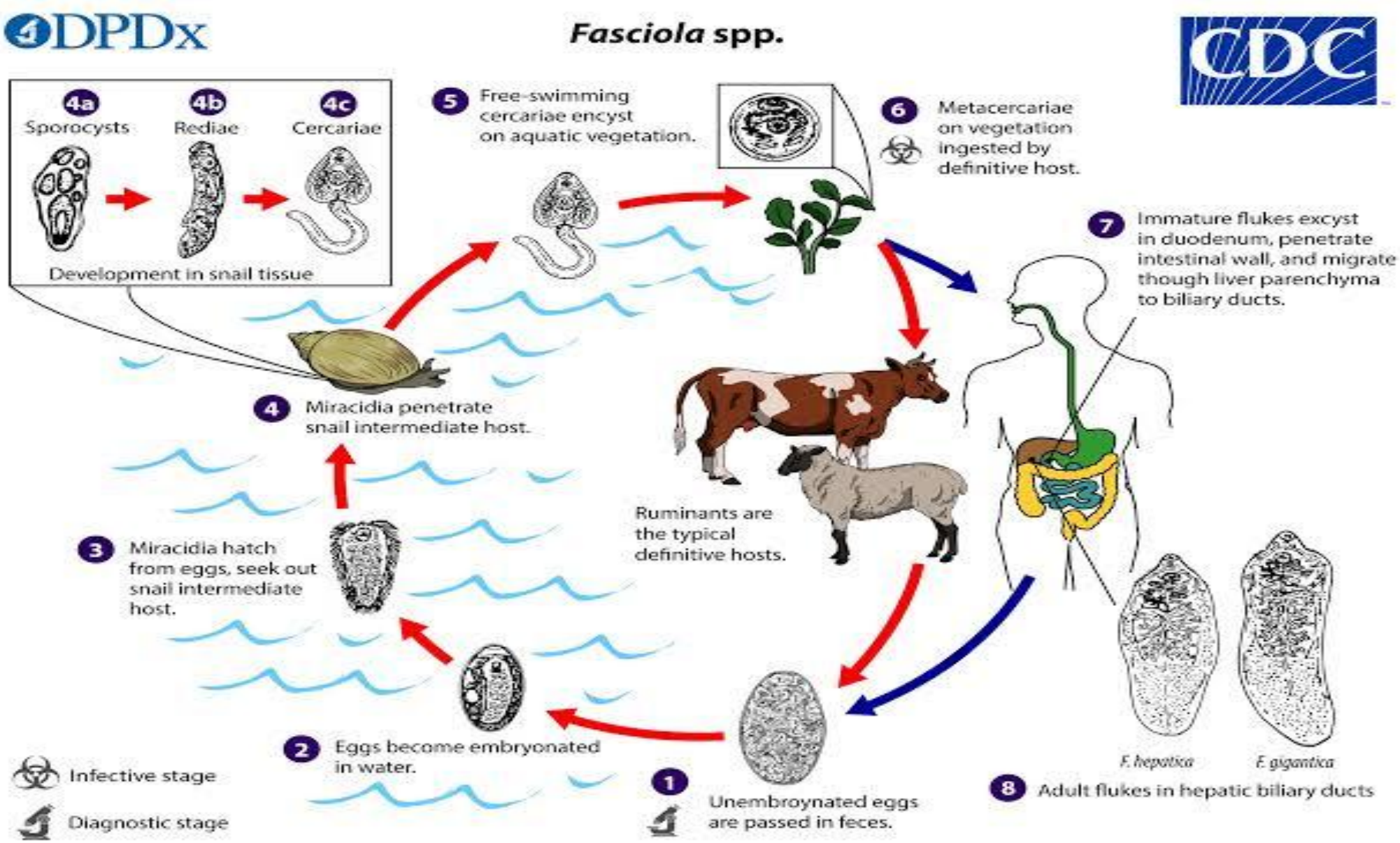
- Liver fluke or sheep liver fluke
- Host are snail, sheep and man.
- Disease: Biliary obstruction occur , sometime biliary cirrhosis

Clonorchis sinensis

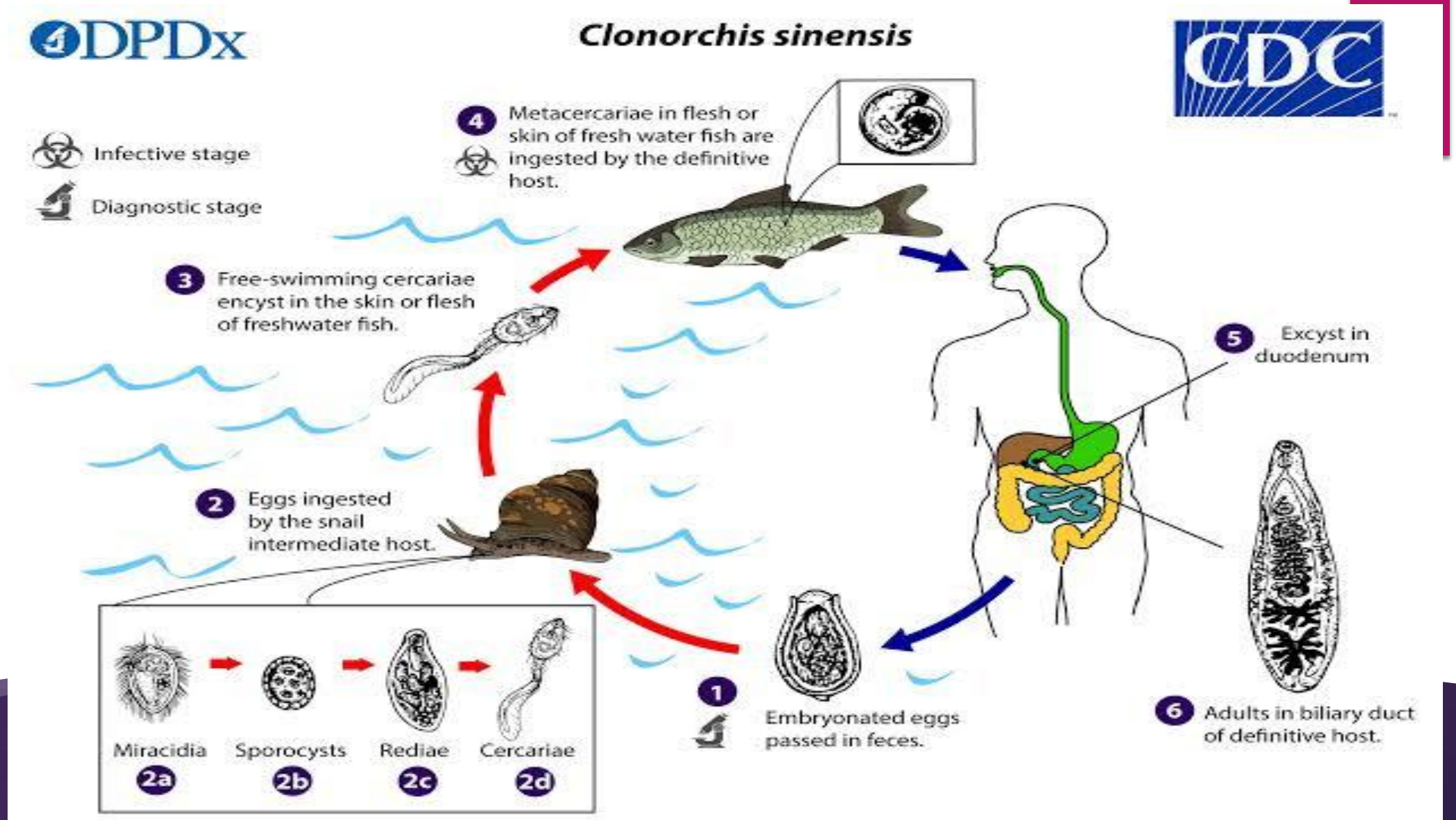
- The Chinese liver fluke
- Host are fish, snail and man
- Disease: Cholecystitis and cholelithiasis.

Schistosoma

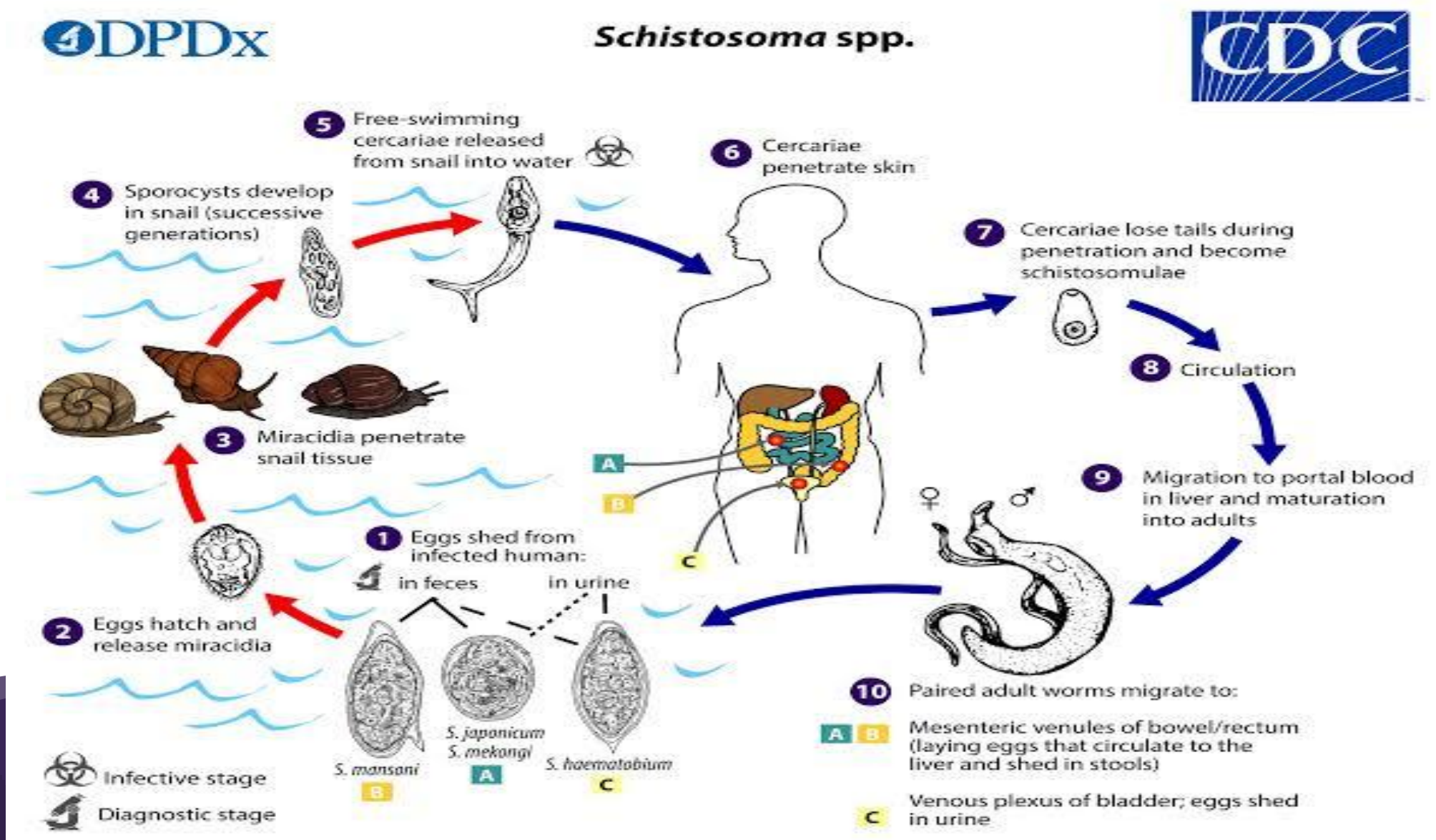
- Blood fluke
- Host are snail and man
- Disease: The urinary tract or the intestines may be infected.



Life cycle of liver fluke



Life cycle of Chinese liver fluke



Life cycle of Blood fluke

Class Cestoidea

AMMARA ZEB

Class Cestoidea:

- Tapeworms
- 35000 species are Endoparasites
- Long, ribbon-like bodies
- Absorbs nutrients from hosts
- Hermaphrodites
- Grow by adding proglottids:(body sections)
- Each proglottids contains male and female Reproductive organs
- All Cestodes have stage of oncosphere in the life cycle.

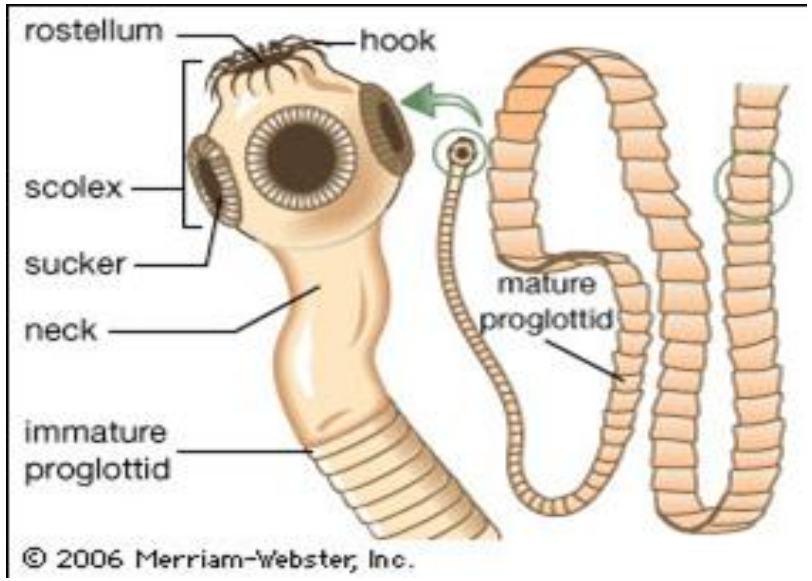
Two Subclasses:

Subclass Cestodaria:

- Endoparasites
- 15 species have been identified yet

Subclass Eucestoda:

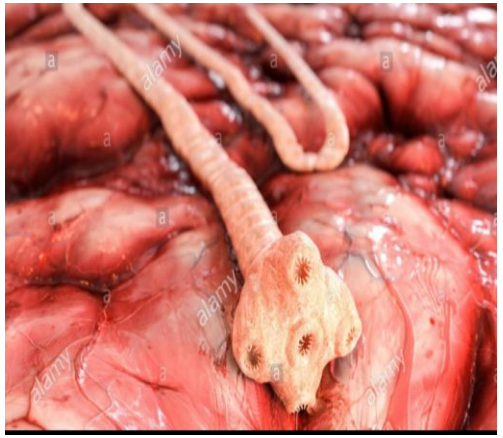
- True Tapeworms
- Body consists of;
  1. Scolex
  2. Neck
  3. Strobila



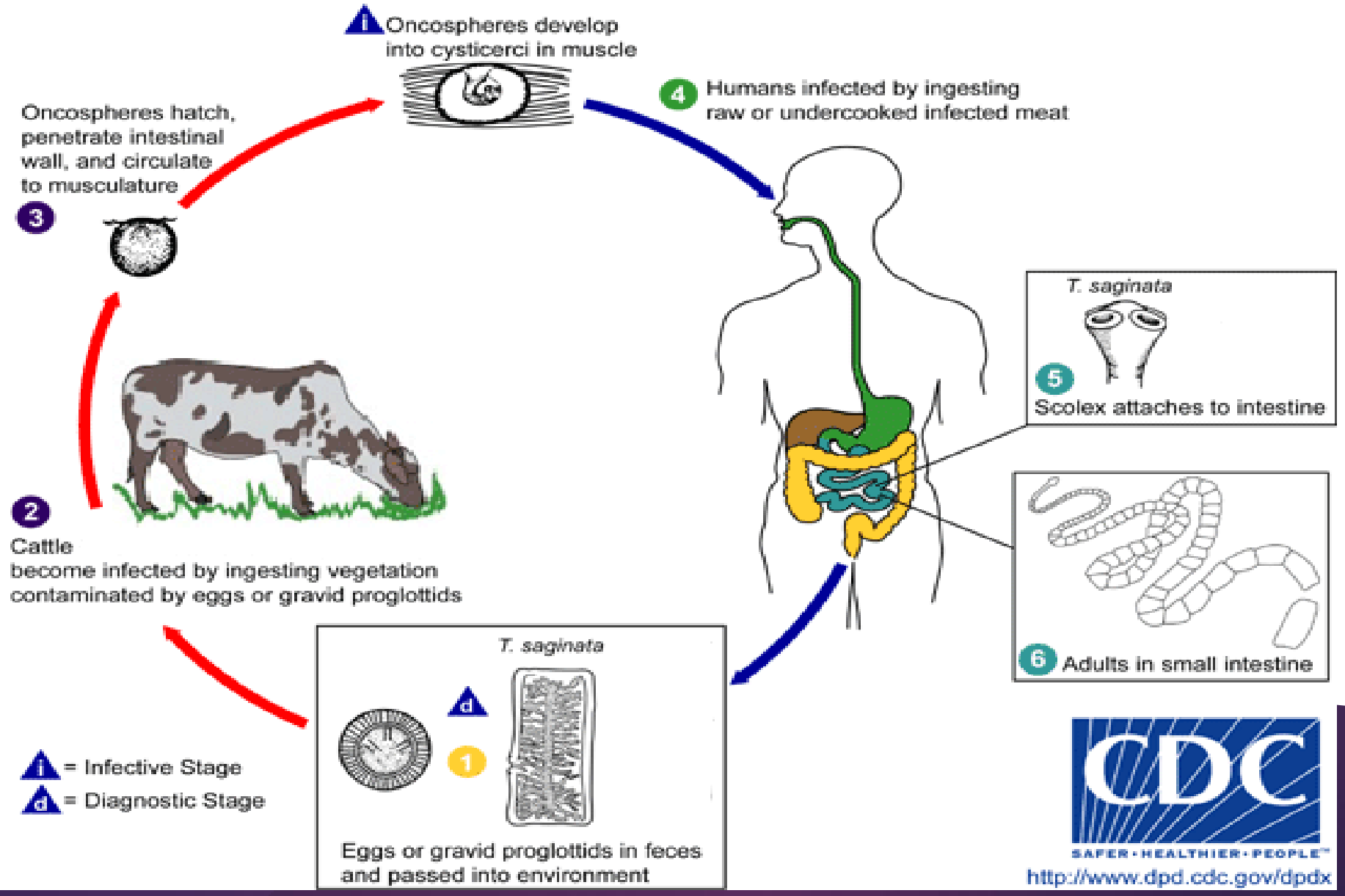
Some Important Tapeworm Parasites of Human:

Taeniarhynchus saginatus

- **Beef Tapeworm**
- **Length: 25m**
- **Location in Host: Small intestine of man**
- **Intermediate Host: Cattle**
- **Mode of Transmission: Eating insufficiently cooked meat**
- **Disease: Taeniasis**



Beef Tapeworm

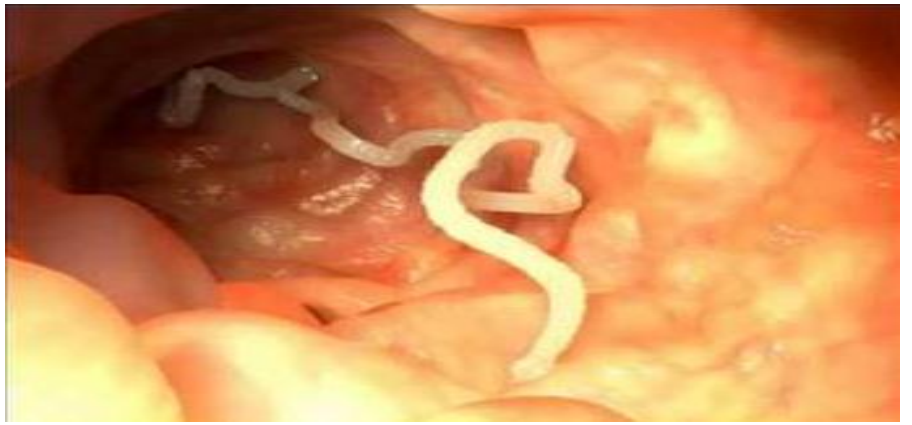


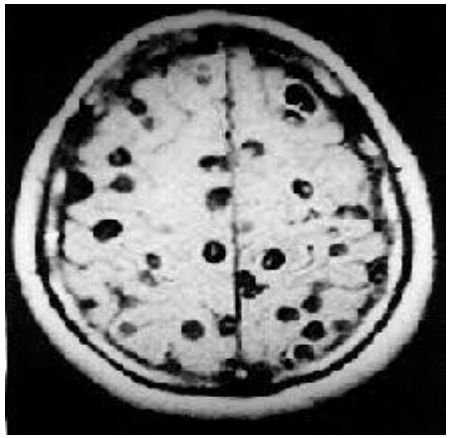
Life cycle of beef tapeworm

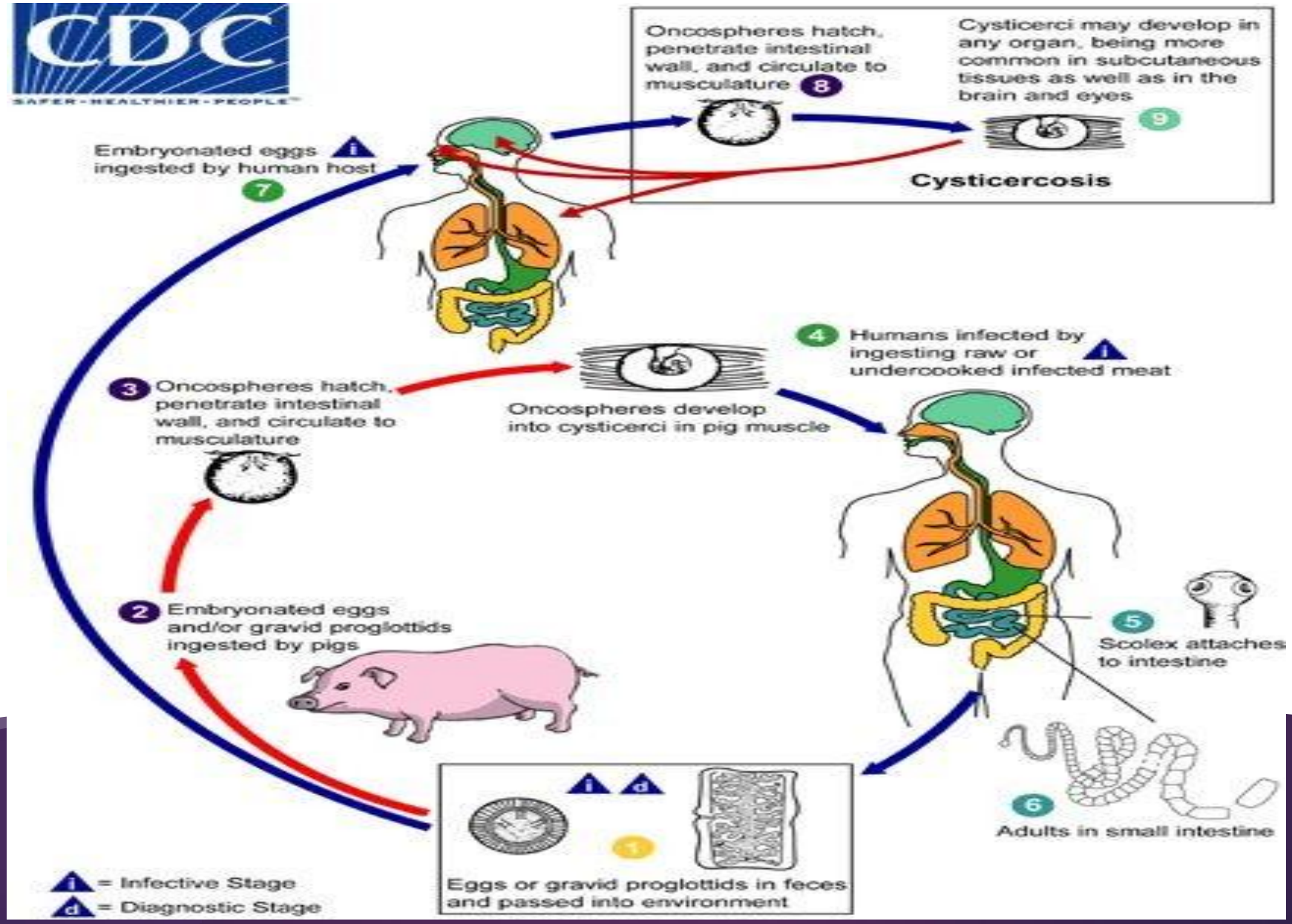
Some Important Tapeworm Parasites of Human:

Taenia solium

- Pork Tapeworm
- Length: 10m (2 to 3m common)
- Location in Host: Small Intestine of man
- Intermediate Host: Pig
- Mode of Transmission: Ingesting meat
- Disease: Cysticercosis





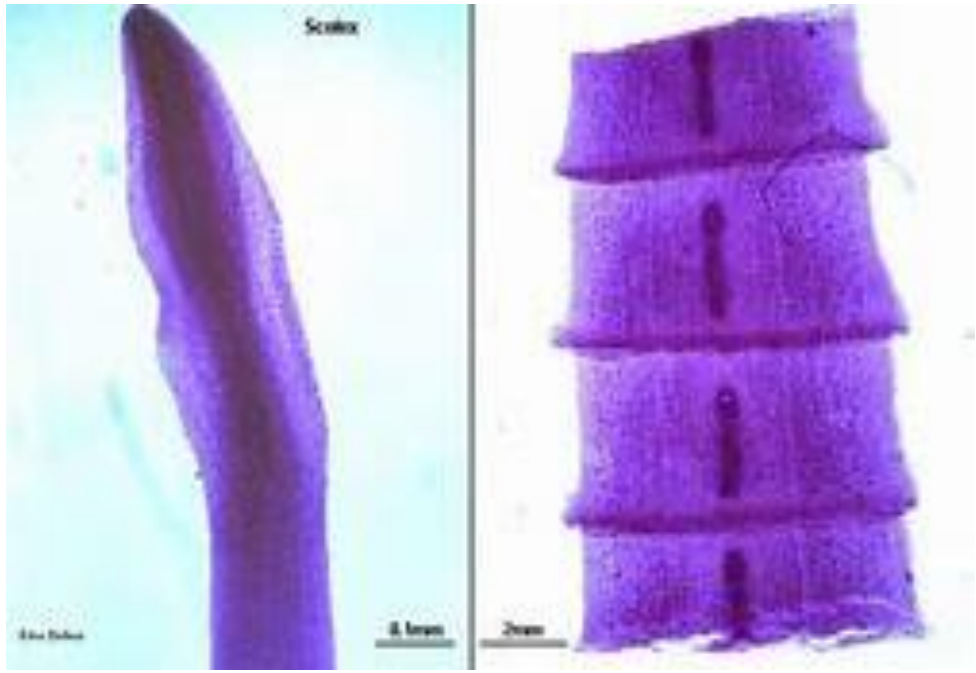


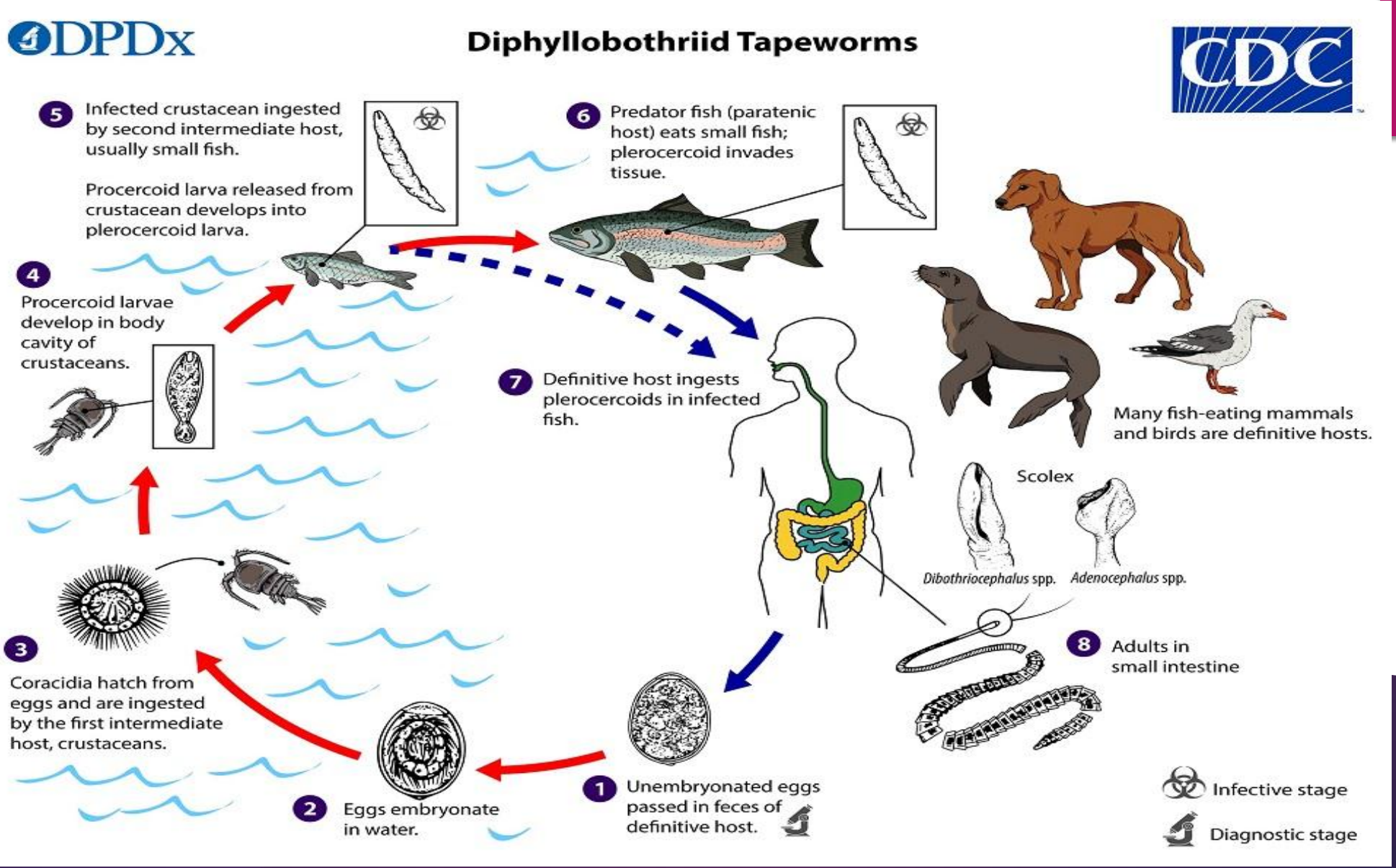
Life cycle of pork worm

Some Important Tapeworm Parasites of Human:

Diphyllobothrium latum

- **Broad fish Tapeworm**
- **Length: 10m**
- **Location in Host: Small Intestine of man**
- **Intermediate Host: Fish**
- **Mode of Transmission:Ingesting raw Fish**
- **Disease: Diphyllobothriosis**





Life cycle of Broad fish tapeworm

Phylum Nemertea

HAMNA SANAA

PHYLUM NEMERTEA

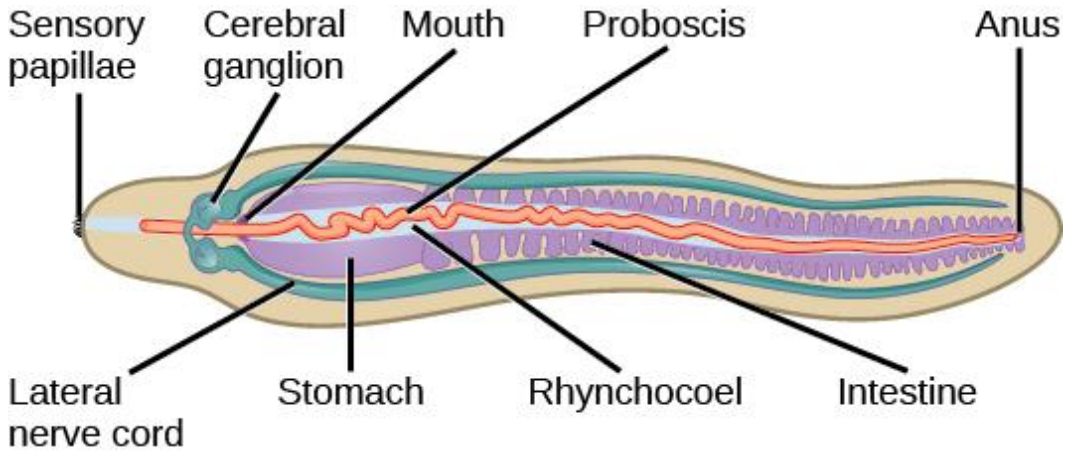
- **Diversity**
- **General Characteristics**
- **Evolutionary Innovation**
- **Digestive System**
- **Circulatory System**
- **Reproduction**
- **Locomotion**

DIVERSITY

- **Nine Hundred Species**
- **Found In Marine Mud And Sand**
- **Few Millimeters To Several Centimeters**
- **Pale Yellow ,Orange, Green Or Red**

General Characteristics

- **Triploblastic ,acoelomate ,bilateral ,unsegmented**
- **Complete digestive system**
- **Longitudinal nerve cord**
- **Closed circulatory system**
- **Body musculature with two or three layers**



Evolutionary innovation

- **Phylum nemertean has complete digestive system that is a major evolutionary innovation found in higher bilateral animals**

- **A circulatory system with two lateral blood vessels**
- **This combination of blood vessels with their capacity to serve local tissues and one way digestive system with its greater efficiency at processing nutrients allows nemerteans to grow much larger than flat worms**

Distinctive Feature

- **The most distinctive feature of nemerteans is a long proboscis held in a sheath called *Rhynchocoel.***
- **Stylet**
- **The proboscis may be tipped with a barb called *stylet.***
- **Use of proboscis**
- **Carnivorous species use it to capture annelids and crustacean prey.**

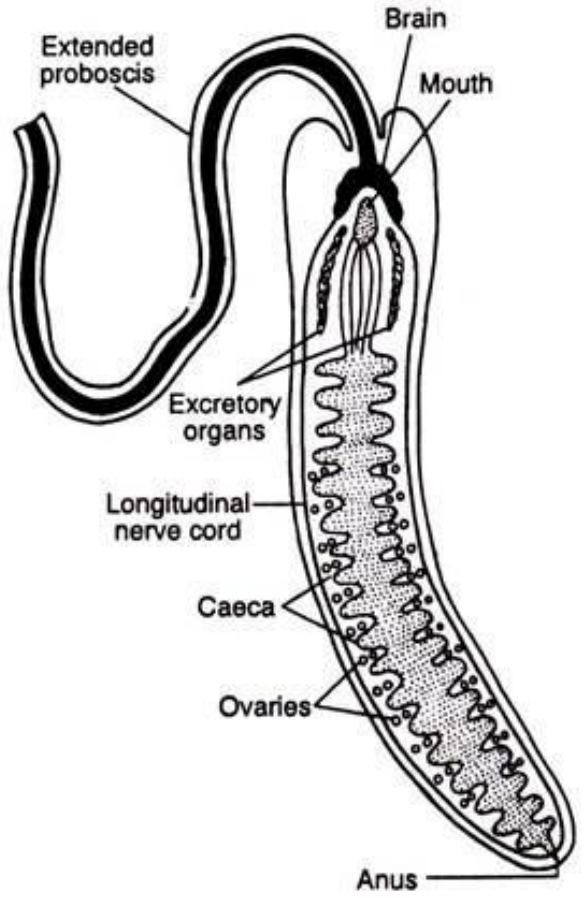
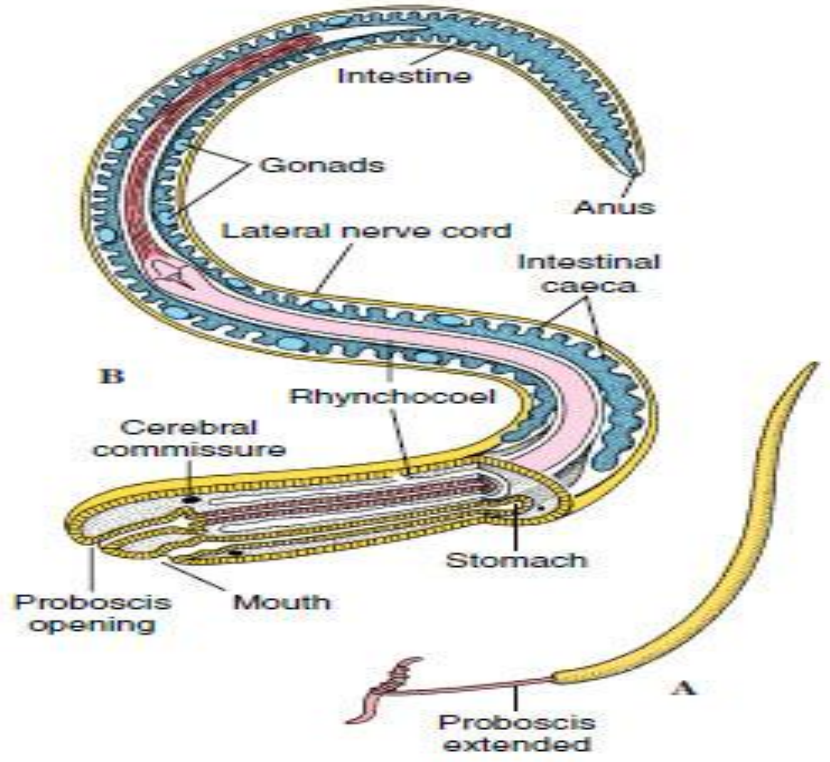


Fig. 14.31: General organization of a nemertean.

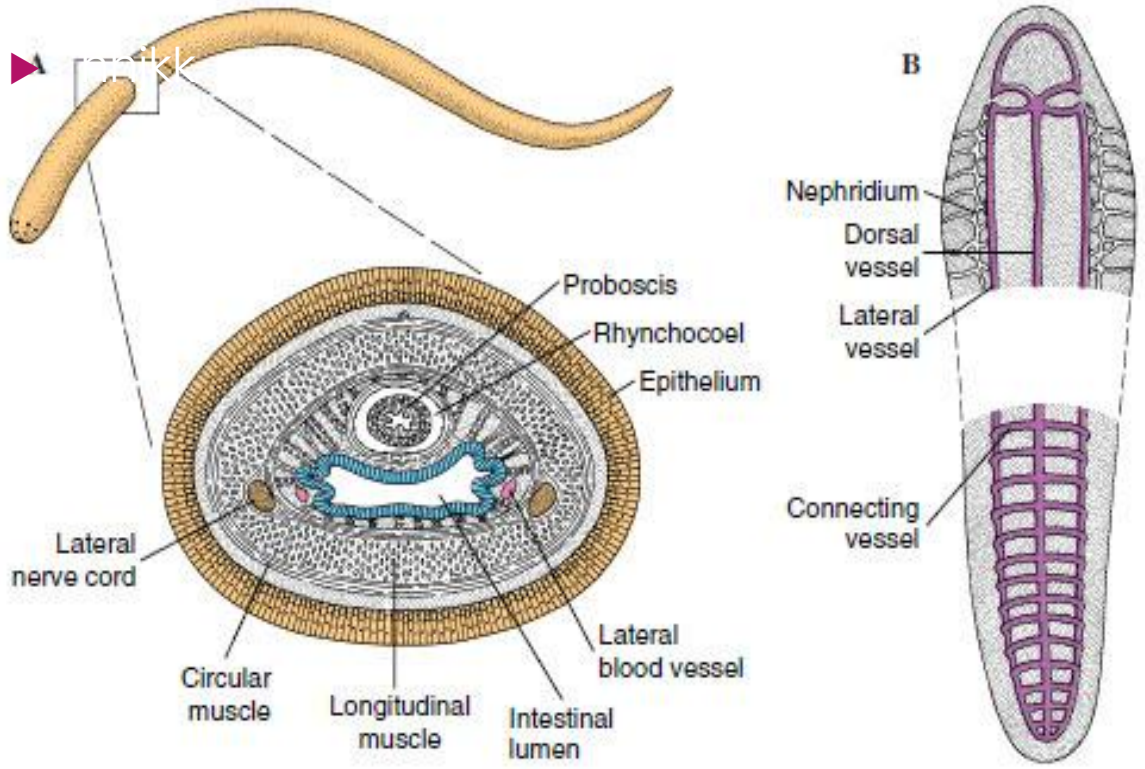
Digestive System

- **Complete digestive system.**
- **Mouth for ingestion.**
- **Anus for elimination of waste materials.**



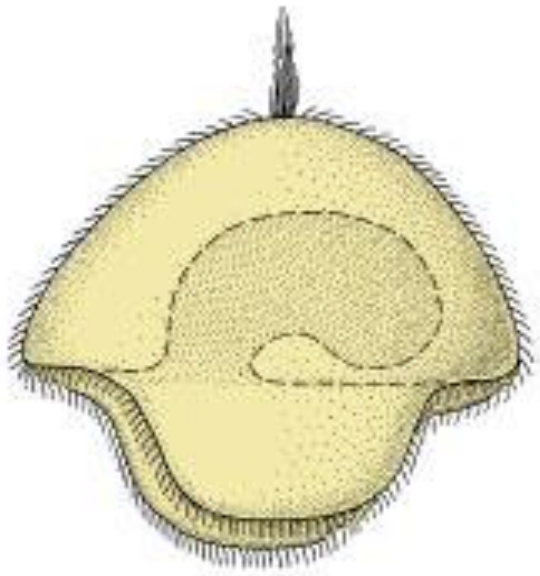
Circulatory System

- **Closed circulatory system.**
- **No heart is present.**
- **Contraction of wall of two large lateral blood vessels propels blood.**
- **Blood does not circulate ,moves forward and backward through longitudinal vessels.**



Reproduction

- **Dioecious**
- **Reproductive structures develop from parenchymal cells along each side of the body**
- **External fertilization**
- **Helmet shaped ,ciliated pilidium larva**
- **Free swimming**



Phylum Gastrotricha

ISBAH FATIMA

Phylum Gastrotricha:

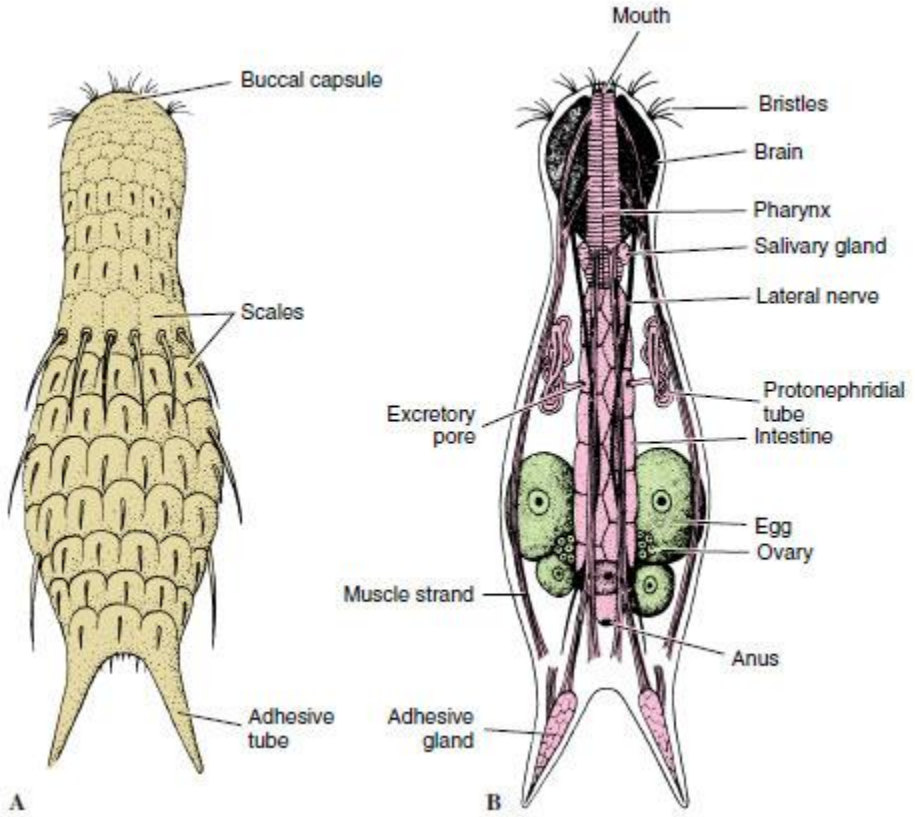
- 500 Species
- Found in all three habitat types
  a. Marine
  b. Fresh water interstitially or on plants
  c. Terrestrially in water film covering soil particles
- Microscopic to 4mm long
- Eutelic
  a. Genetically predetermined and constant number of cells
  b. Cell size increases but not cell number

Body Form:

- **Bowling pin shaped**
- **Name means *“hairy belly”***
- **Locomotary cilia on ventral surface**
- **Adhesive tubes located near head and/ or on lateral body.**
- **Adhesive organs at posterior**

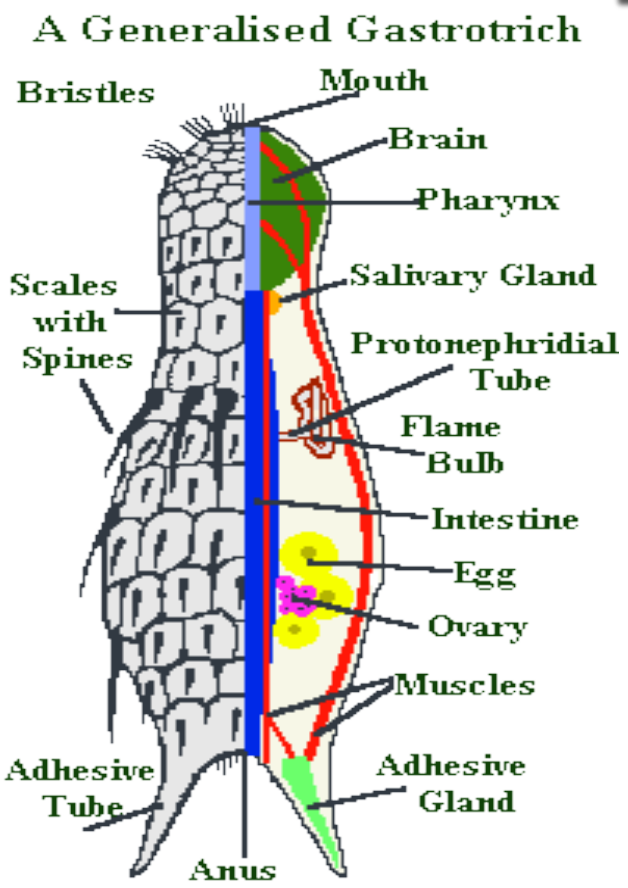
General Characteristics:

- *Gastrotrichs* appear similar to rotifers but without the ciliated corona and have a bristly looking body.
- Members of the phylum gastrotricha are *pseudo coelomate* and have three embryonic germ layers*(Triploblastic*).
- Complete digestive system
- Hermaphroditic or parthenogenesis.



General Characteristics:

- **Nervous system** includes a brain and a pair of lateral nerve trunks
- **Sensory structures** include tufts of long cilia and bristles on the rounded head.
- **Digestion** is mostly extra-cellular.
- Reproduce sexually and are hermaphrodite.



Phylogenetic Consideration

- **Free living and parasitic ways of life probably diverged in the Cambrian period ,600 million years ago.**
- **Show more distant relationships to the acoelomates.**
- **Ventral cilia may have been derived from the same ancestral sources as those of the turbellarian flatworms.**
- **More conclusive evidence links the parasitic flatworms to ancient free living ancestors**.

References

- *Hoberg, Eric P. (1999).* "Systematics of the Eucestoda: advances toward a new phylogenetic paradigm, and observations on the early diversification of tapeworms and vertebrates". *Systematic Parasitology*. ***42*** *(1): 1–12.* doi:10.1023/a:1006099009495. PMID 10613542
- Biology. Retrieved from https://www.cdc.gov/parasites/taeniasis/biology.com
- "Taeniasis/Cysticercosis". *www.who.int*.
- Miller and Harley 5th edition.

THANK YOU!