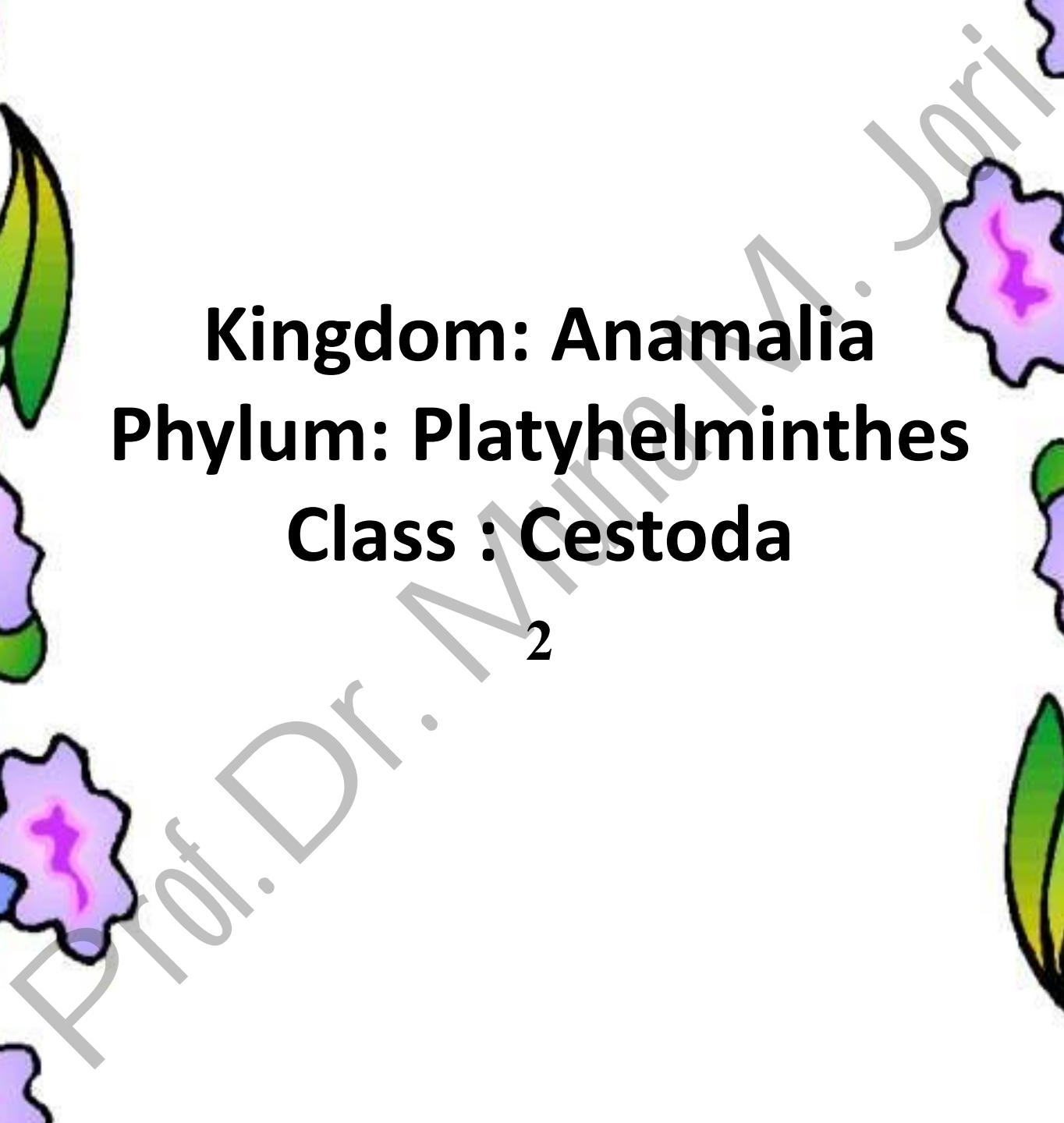




**Kingdom: Anamalia**  
**Phylum: Platyhelminthes**  
**Class : Cestoda**





# 1- *Taenia saginata* (Beef tapeworm)



**Mode of human Infection:** Eating beef containing larval stage (*Cysticercus bovis*)

**Transmission:** Consumption of infected raw meat.

**Biology:** Adult lives in human intestine lumen.

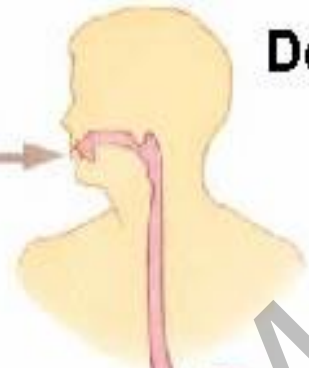
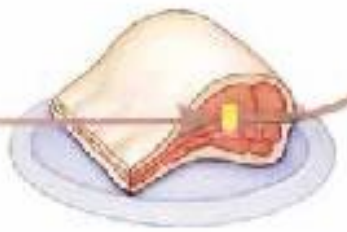
**Clinical:** diarrhea, abdominal cramping, nervousness, nausea, and loss of appetite.

**Diagnosis:** Stool examination for eggs or segments. Segments differentiated from pork tapeworm by having large number of uterine branches when viewed with a trans-illuminating light source.

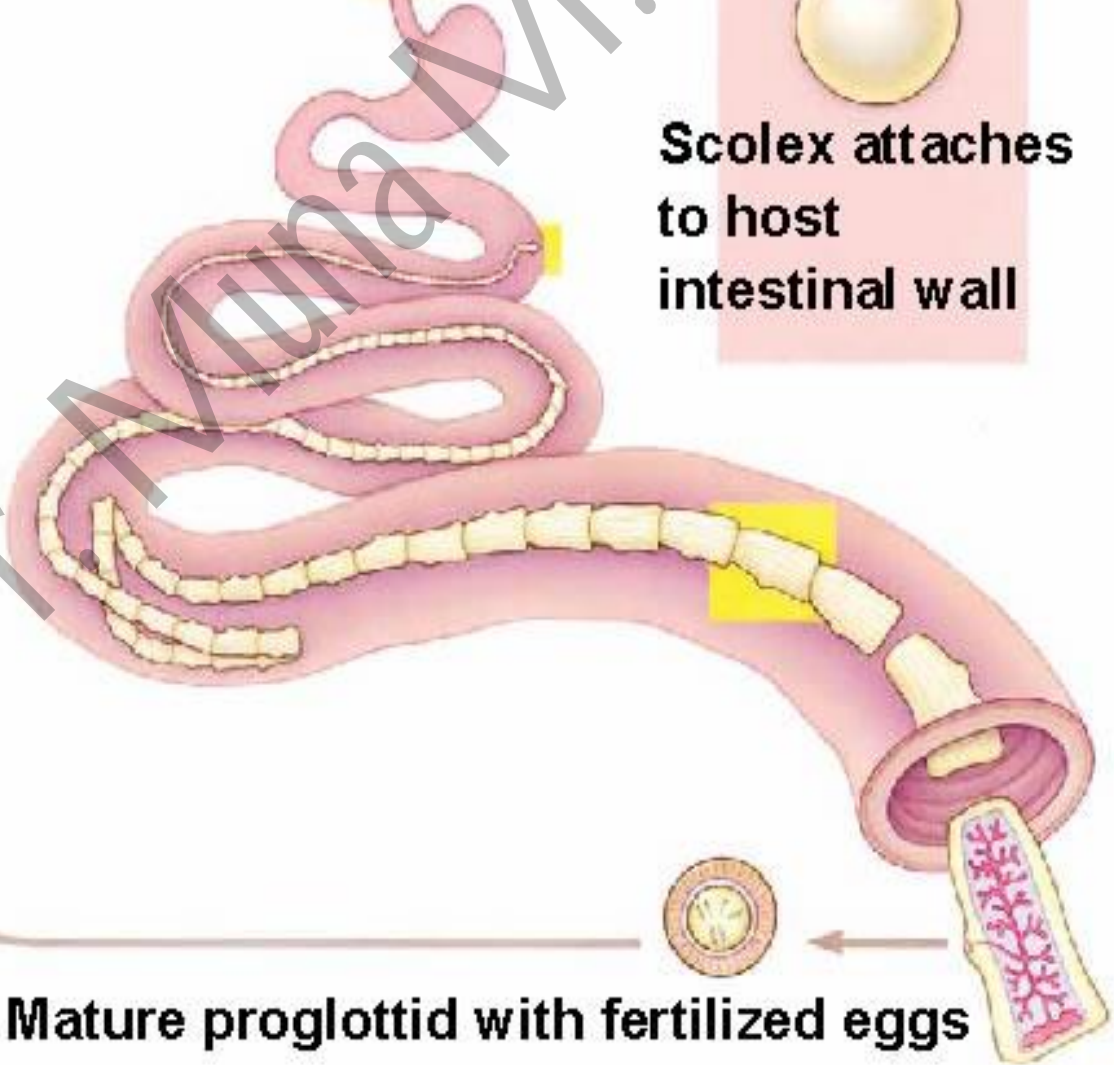
**Prevention:** Sewage treatment; cook or freeze beef



**Definitive host**



**Scolex attaches to host intestinal wall**



**Mature proglottid with fertilized eggs**

**Larvae encysted in muscle tissue**



**Intermediate host**

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## 2- *Taenia solium* (Cysticercosis)



**Mode of human infection:** Eating measly pork containing larval stage (*Cysticercus cellulosae*)

**Epidemiology:** The larval form of *T. solium* infects humans who ingest the eggs of this tapeworm passed in human stool. This occurs most frequently, where human stool is used as fertilizer. This occurs most frequently in developing countries where pigs are bred.

**Biology:** *T. solium* larvae, which penetrate small intestine mucosa and are carried throughout the body where they are deposited and grow in many different tissues (muscle, subcutaneous, brain, eye, heart).

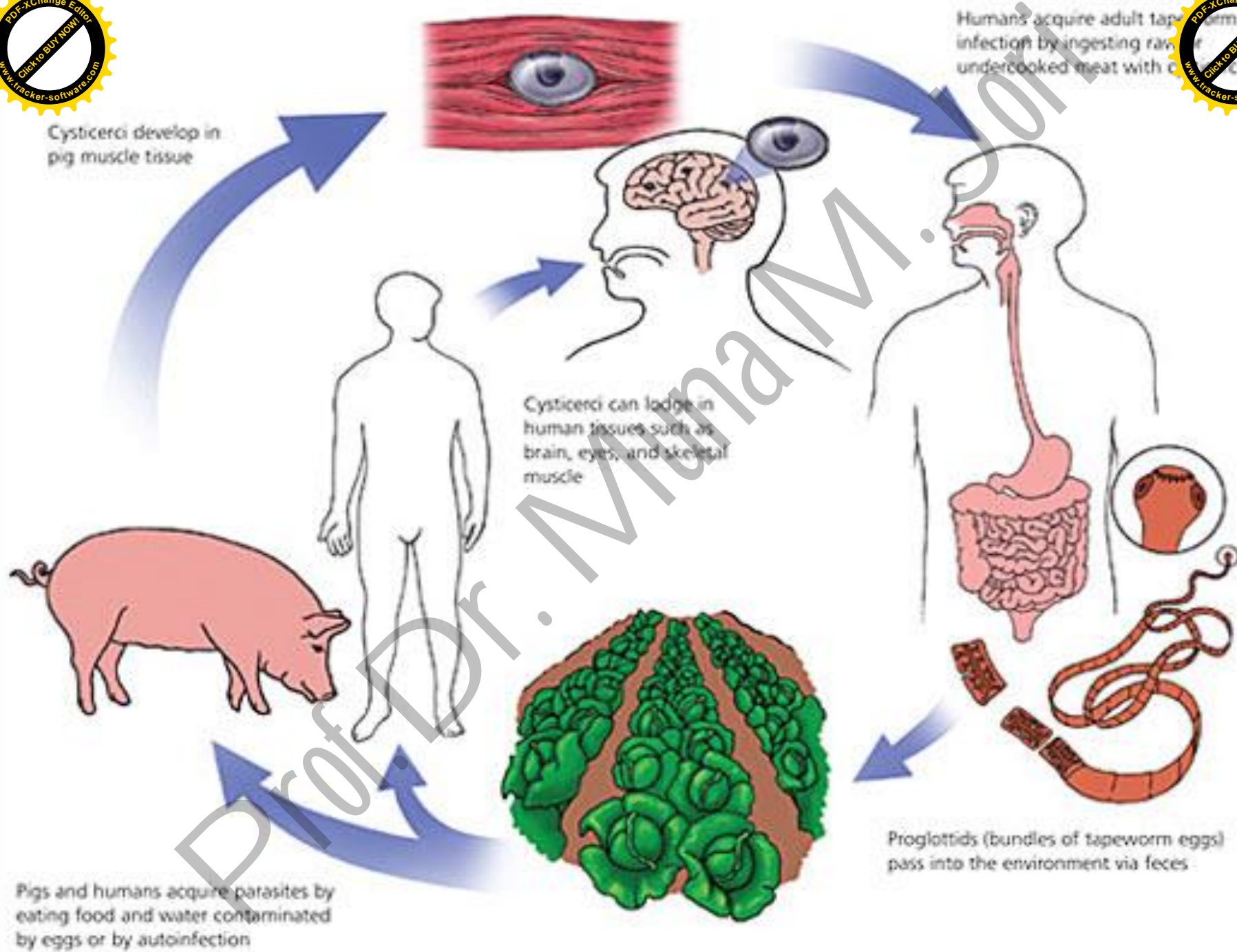
**Clinical:** Pathology is produced by the cysts as space occupying lesions (especially brain) and as foci of host inflammatory response when the cyst eventually dies or is killed with anti-helminthics.

It is shorter than beef tapeworm, having fewer than 1,000 proglottids. Twenty to thirty thousand eggs every day can be shed into the feces of a carrier. Over time, the tapeworm can riddle the brain with its grape-sized bladders, causing progressive brain deterioration to the point of death, heart, and eyes.

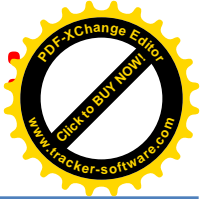
This worm can remain in a human host for twenty-five to thirty years, reaching lengths of two and one-half to three meters (eight to ten feet).

Humans become infected after eating undercooked pork or smoked ham or sausage where cysts are imbedded in the tissue.



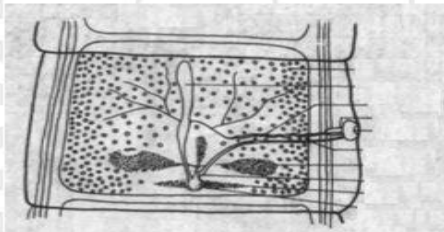


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# Differences between *T. saginata* and *T. solium*:

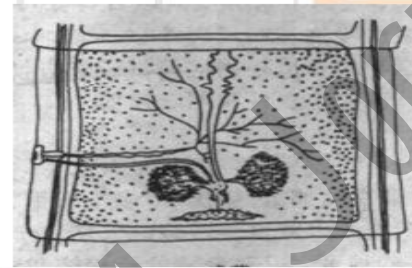
<i>Taenia solium</i>	<i>Taenia saginata</i>	Characteristic
Pig, wild boar	Cattle, reindeer	<b>Intermediate Host</b>
Brain, skin, muscle	Muscle, viscera	<b>Site of Development</b>
Hooks	No hooks	<b>Scolex: adult worm</b>
Rostellum & hooks	No rostellum	<b>Scolex: cysticercus</b>
8 (7 -11)	23 (14 - 32)	<b>Proglottids: uterine branches</b>
In groups, passively	Single, spontaneous	<b>Passing of proglottids</b>
Three lobes	Two lobes	<b>Ovary</b>
Absent	Present	<b>Vagina: sphincter muscle</b>



3 lobes of ovary



Mature proglottid  
of *T. solium*

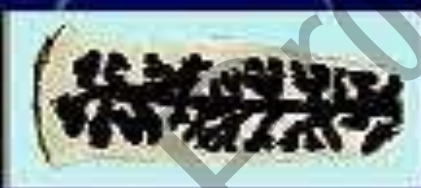


2 lobes of ovary



Mature proglottid  
of *T. saginata*

#### 4. Gravid proglottid



*T. solium*



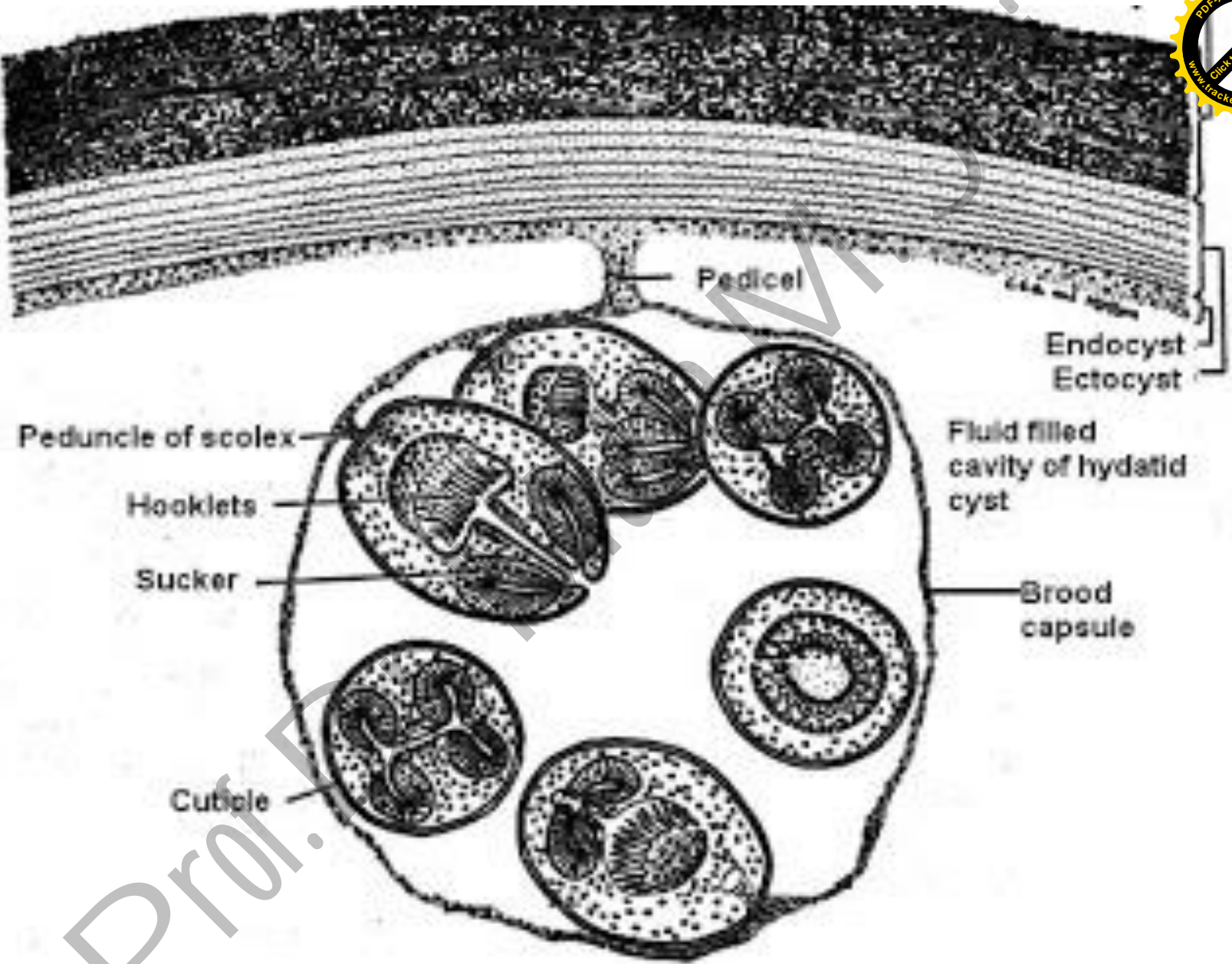
*T. saginata*





*Taenia*  
egg



- Adult worms are small (3-6 mm in length).
- Composed from a :Scolex - Neck - Strobila - segments (Immature , Mature , Gravid)
- **Hydatid cyst features** : Round & cystic
- **Cyst wall**: laminated layer and germinal layer, its contents from: cystic fluid, brood capsules, protoscolex, daughter & granddaughter cyst, (hydatic sand).
- **Hydatid sand** :The protoscoleces generally settle down at the bottom of the cyst .



**Hydated cyst**



adult *Echinococcus granulosus* resides in the small bowel of the definitive hosts( dogs or other canids). Gravid proglottids release eggs that are passed in the feces.

After ingestion by a suitable intermediate host (sheep, goat, swine, cattle, horses, camel), the egg hatches in the small bowel and releases an oncosphere that penetrates the intestinal wall and migrates through the circulatory system into various organs, especially the liver and lungs. In these organs, the oncosphere develops into a cyst that enlarges gradually, producing protoscolices and daughter cysts that fill the cyst interior.

definitive host becomes infected by ingesting the cyst-containing organs of the infected intermediate

host. After ingestion, the protoscolices evaginate, attach to the intestinal mucosa, and develop into adult stages in 32 to 80 days.

Human become infected by ingesting eggs, with resulting release of oncospheres in the intestine and developing the cysts in various organs.

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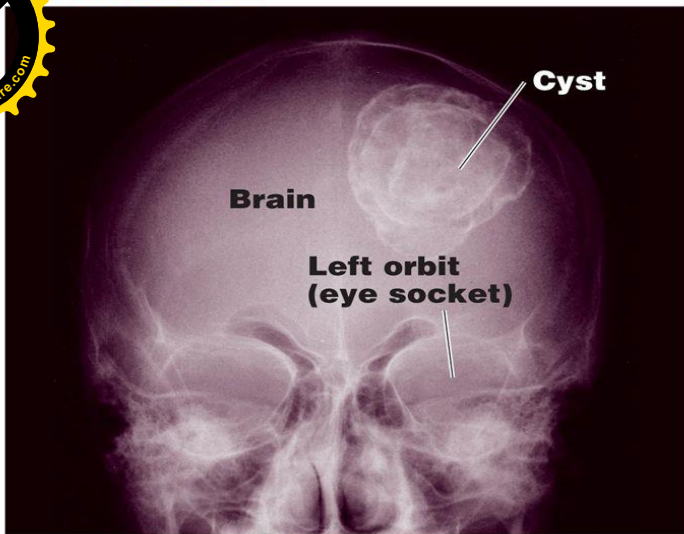
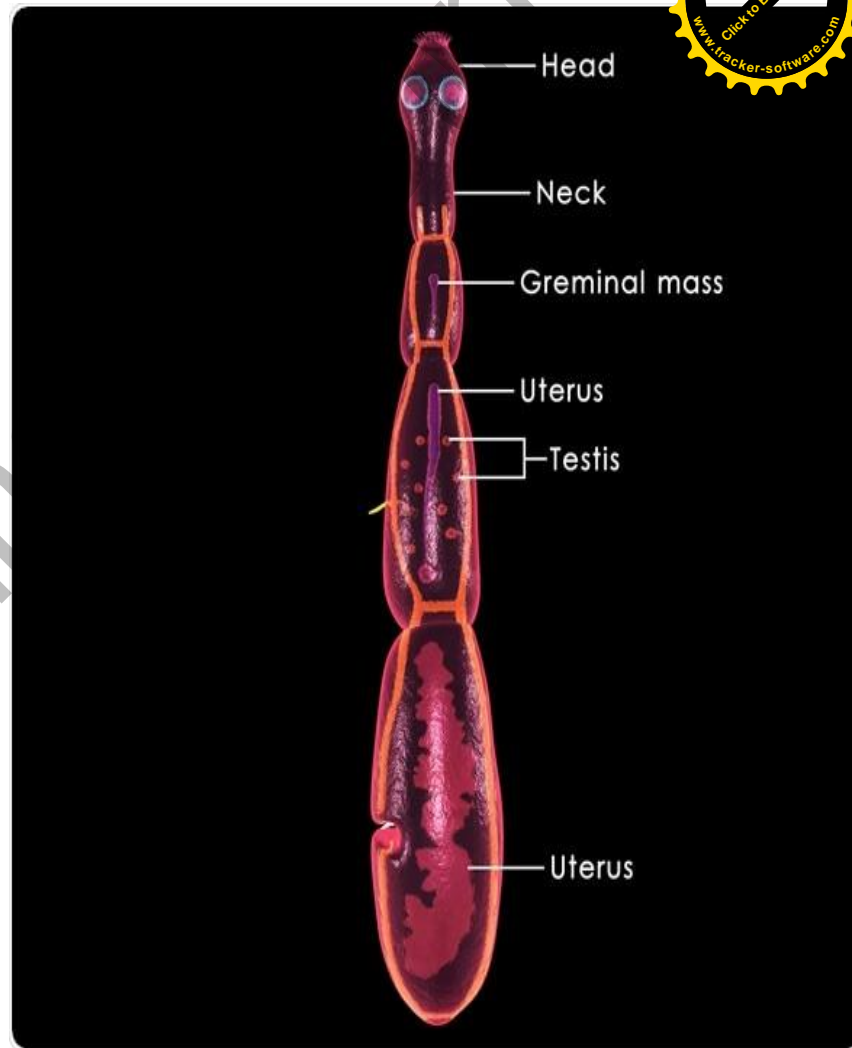
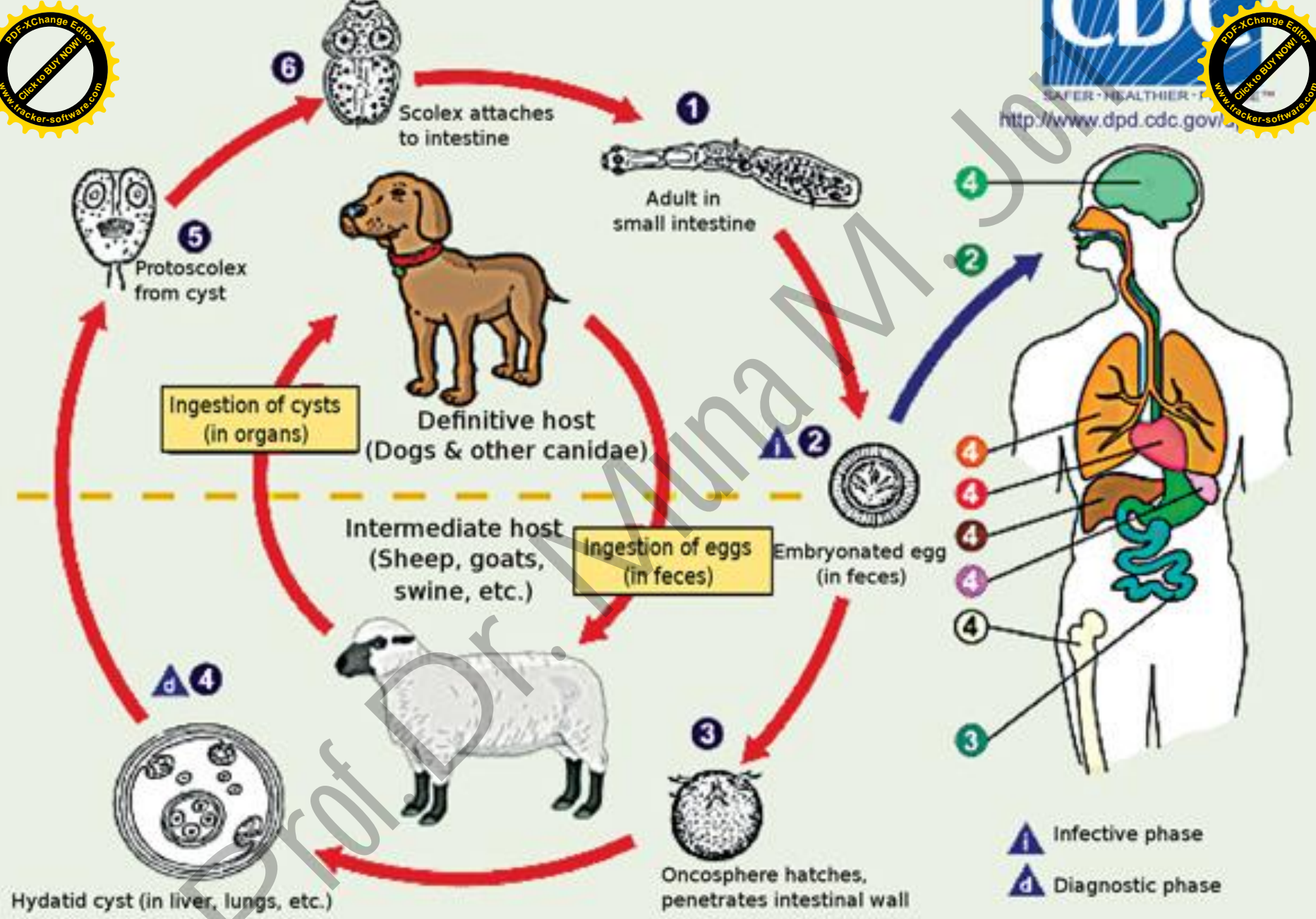


Figure 25.22



Adult worm







*Thank you*



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