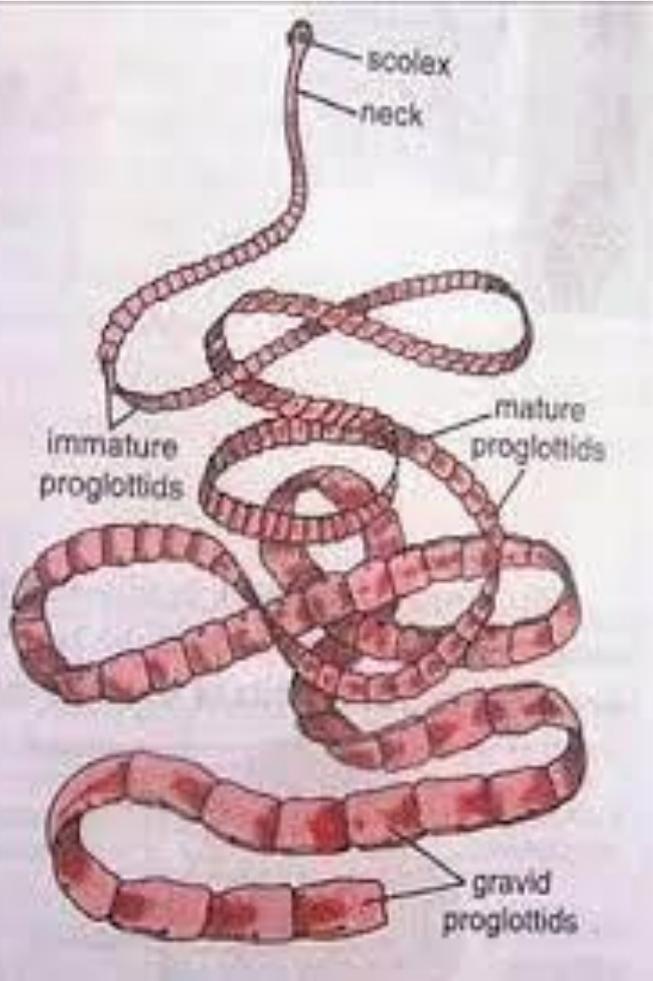


Taenia solium and *Taenia saginata*

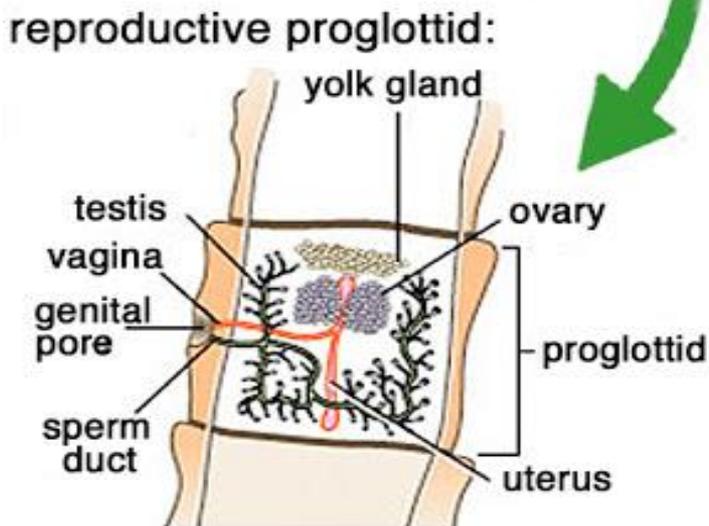
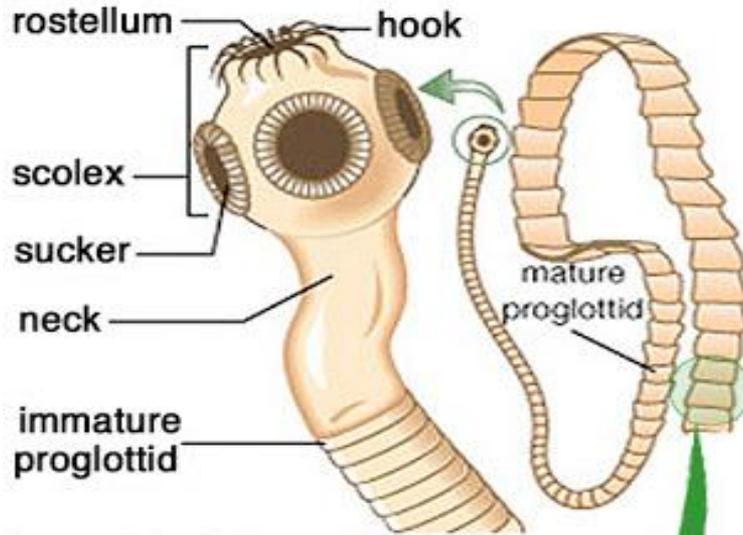
Distribution: Worldwide

Host:- Man [definitive host] and pig (*solium*)/cow(*saginata*) [Intermediate host]

Habitat: upper jejunum (SI)

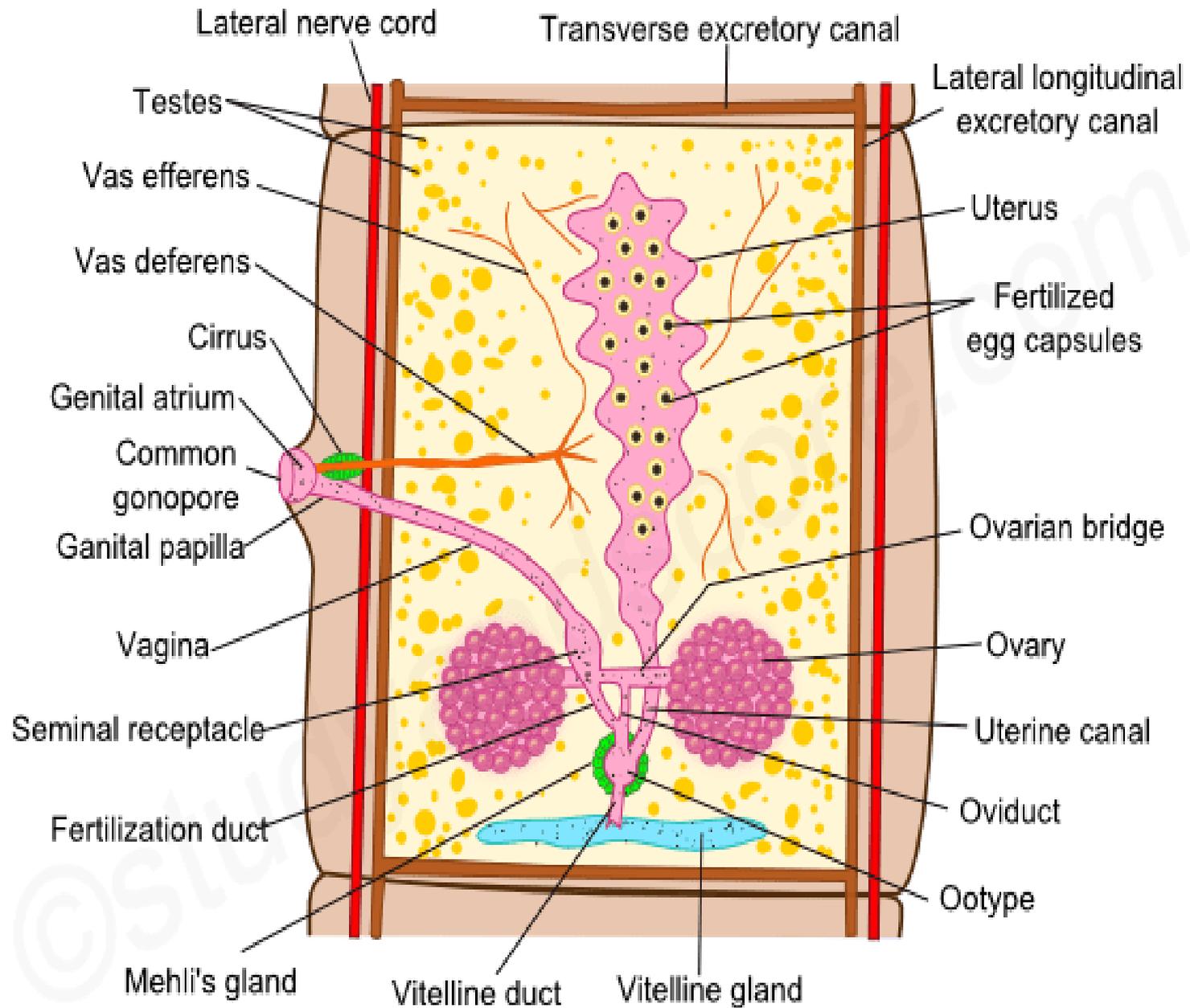


Adult Worms of <i>T. saginata</i> and <i>T. solium</i>		
	<i>T. saginata</i>	<i>T. solium</i>
LENGTH:	5 to 10 metres.	2 to 3 metres.
"HEAD":	Large, quadrate; without rostellum and hooks; suckers may be pigmented.	Small, globular; with rostellum and hooks; suckers not pigmented.
PROGLOTTIDES (Segments):	1000 to 2000.	Below 1000.
NUMBER:	Expelled singly and may force anal sphincter.	Expelled passively in chains of 5 or 6.
EXPULSION:		
UTERUS:	Lateral branches 15 to 30 on each side; thin and dichotomous. Vaginal sphincter present.	Lateral branches 5 to 10 on each side; thick and dendritic. Vaginal sphincter absent.
VAGINA:	2 in number, without any accessory lobe.	2 in number, with an accessory lobe.
OVARIES:	300 to 400 follicles.	150 to 200 follicles.
TESTES:	Cow	Pig



- **Body (Strobila)** divided into Scolex (head), Neck and Strobilus or body.
- **Head or Scolex** is the size of a Pin's head.
- Has a crown of hooks at the anterior end called **rostellum**.
- four suckers are present in scolex
- Strobilus has three types of **Proglottids**-
 - **Immature proglottid**
 - **Matured proglottid**
 - **Gravid proglottid**

- ❑ All tapeworms are hermaphrodite. Each matured proglottid comprises of a complete set of male and female reproductive organs.
- ❑ Tapeworms show protandry in other worms the male reproductive organs differentiate before the female reproductive organs. Hence, the anterior **100-150** proglottids has only male system (**Immatured proglottid**) which the remaining posterior ones has both the female and the male reproductive system (**Matured proglottid**) the proglottids at the posterior end of the body **are gravid**.
- ❑ So, After fertilization, the matured proglottid at the end of the body loses all its genital organs except the highly branched uterus which is filled with **fertilized eggs or capsules with onchosphere (hexacanth embryo)**. These segments called as gravid proglottids .



TAENIA SOLIUM - REPRODUCTIVE SYSTEM IN MATURE PROGLOTTID

Male reproductive system

The following are the parts included in the male reproductive system,

Testes: They are numerous, small, spherical bodies scattered throughout the mesenchyme close to the dorsal surface.

Vas efferentia: From each testis a fine ductule called as vas efferentia arises.

Vas deferens: Vasa efferens unite to form a thick and convoluted tube .

Cirrus: Outer end of vas deferens forms lumen of a thick, muscular copulatory organ called as the cirrus.

Genital atrium: The cirrus opens into a cup-shaped genital atrium through male genital pore. Genital atrium in turn opens to outside through a common gonopore. The genital papilla in the middle of the lateral margin of proglottid. Gonopore is provided with the sphincter to control the flow of the gonads. The common gonopores are arranged alternatively on both sides of the proglottid.

Female reproductive system

Ovary: Ovary is a bilobed organ situated and are connected by a transverse ovarian bridge.

Oviduct: It arises from the middle of ovarian bridge and opens into the ootype.

Ootype: It is spherical bulb-like structure situated at the junction of oviduct, uterus and vitelline duct. The seminal receptacle stores the sperms temporarily. The unicellular **Mehli's glands** surround the ootype and secrete a slimy substance that lubricates the eggs in uterus.

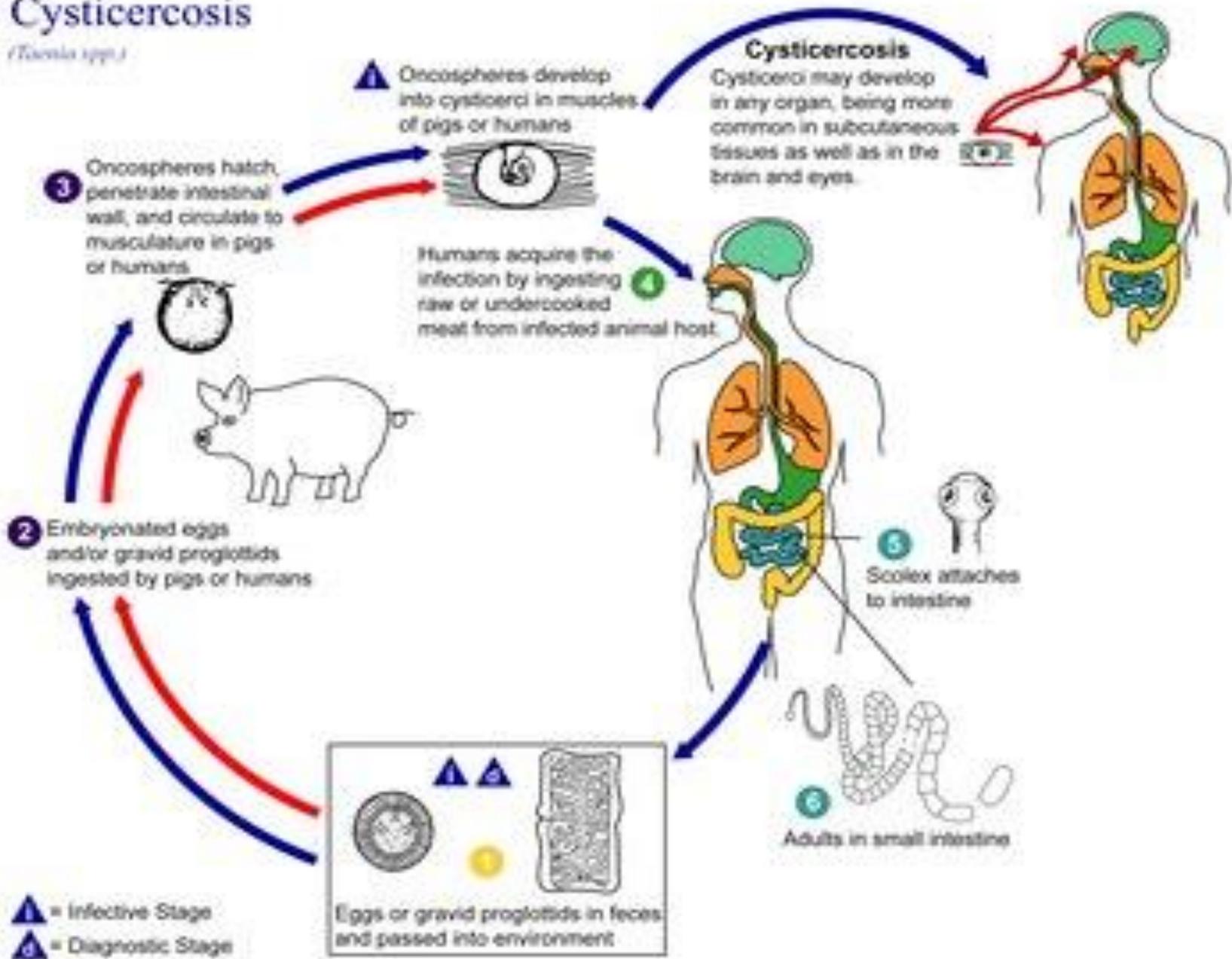
Vagina: It is absent narrow tube. It originates from the female genital pore located behind the male genital pore in genital atrium.

Uterus: It is a blind sac-like structure originating from the ootype and extending towards the anterior side of the proglottid. In gravid proglottids uterus becomes large and highly branched with eggs in various developmental stages.

Vitelline gland: It is situated on the posterior margin of the proglottid and connected to the ootype. It connects with the ootype by a short vitelline duct. It consists of numerous follicles secreting yolk cells.

Cysticercosis

(*Taenia spp.*)



STEP 1. Infected humans (definitive host) excrete the eggs or gravid proglottids in their feces, passing the parasite from the gastrointestinal tract onto nearby vegetation. In egg or gravid proglottid form, *T. solium* is able to remain viable anywhere from days to months.

STEP 2. Pigs (intermediate host) acquire infection by eating and digesting the eggs or gravid proglottids along with the parasitized vegetation during grazing.

STEP 3. The eggs or gravid proglottids migrate to the pig's intestine and oncospheres liberate hexacanth larva which break through the intestinal wall.

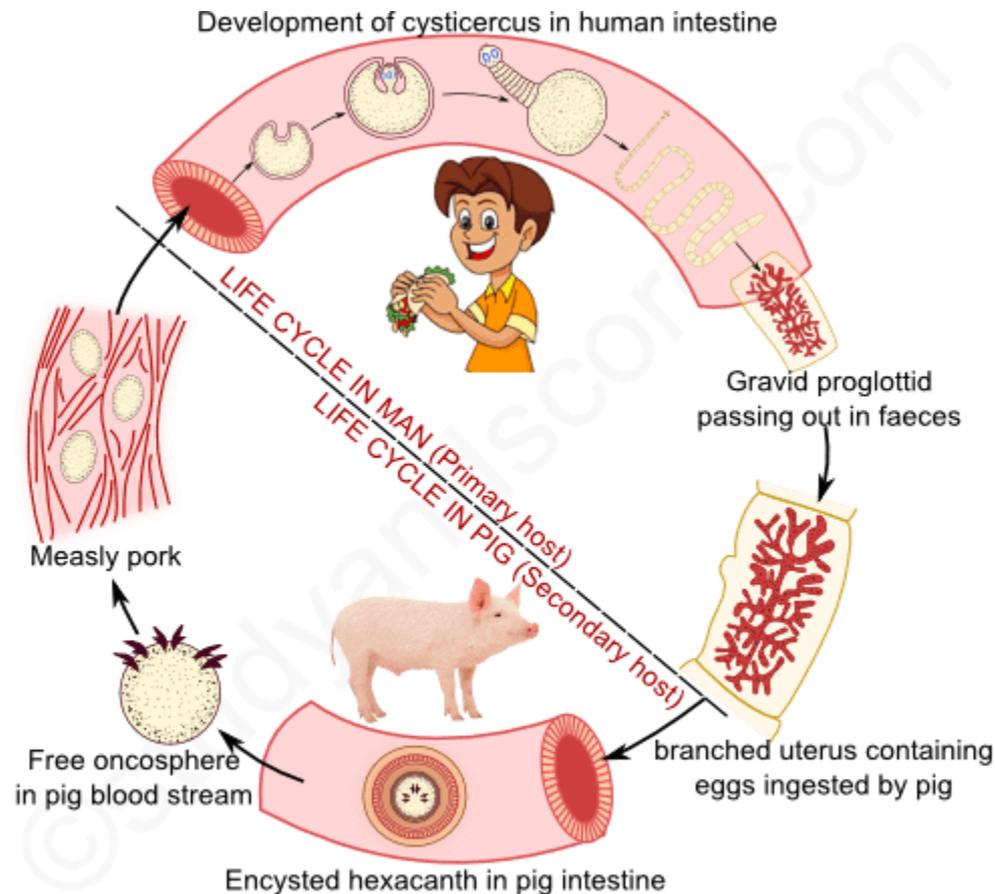
STEP 4. Then, via the circulatory system, they reach the the muscles of the pig and develop into cysticerci (the infective form of *T. solium*)- white opaque fluid filled sacs with inverted solex called prosclex. Cysticerci have the ability to persist in the muscle for many years. Muscles of neck, breast etc are found to be embedded with cysticercus and is called measly pork

Note: Autoinfection can also occur in the life-cycle via fecal-oral contamination. In this case, eggs or gravid proglottids re-enter the body through the mouth and often travel to the central nervous system (CNS), the muscles or the eye, where they develop into cysticerci. The presence of cysticerci in these locations leads to the pathogenesis of cysticercosis (neurocysticercosis in the CNS).

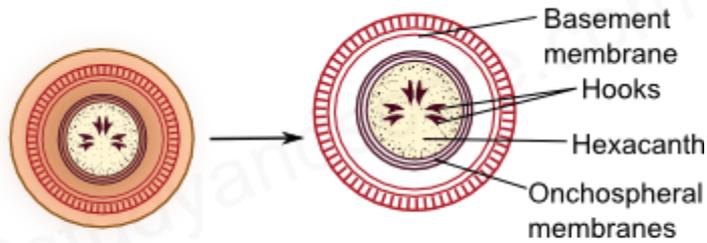
STEP 5. Humans acquire the infection by eating the undercooked or raw flesh of an infected animal.

STEP 6. Cystercerci migrate to the small intestine of the human host and develop into their adult tapeworm form normally within two months. By attaching to the intestinal wall with their scolices (hooked structures), these adult tapeworms may persist for long periods of time, even years.

Transmission

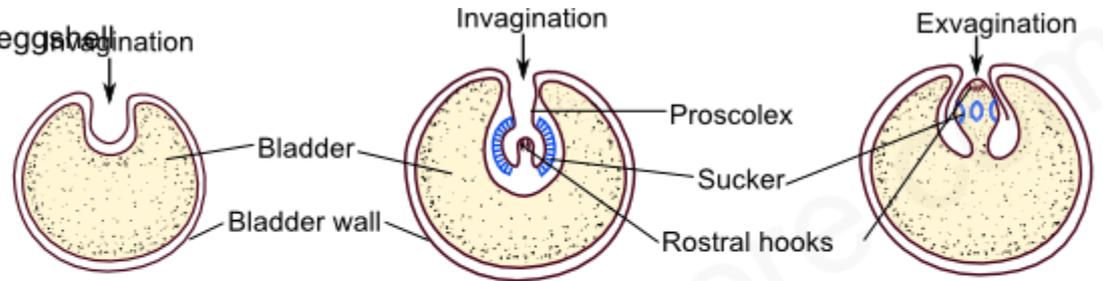


TAENIA SOLIUM - LIFE CYCLE



Onchophore
©studyandscore.com

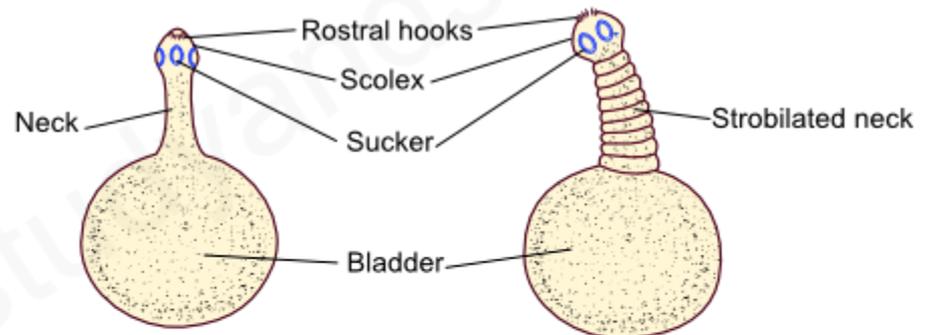
Onchophore without eggshell



Invaginated Cysticercus

Cysticercus with Prosclex

Exvagination of prosclex



Cysticercus with evaginated scolex

Neck budding off Proglottis

TAENIA SOLIUM - MATURATION OF BLADDER WORM

Pathogenicity: Taeniasis

Adult normal does not cause any major symptom ,
occasionally abdominal discomfort, indigestion,
diarrhoea followed by constipation

Cysticercus cellulosae accidentally surviving and
getting deposited in different organs of man, in eye,
brain can cause severe problems.

Treatment :Mepacrin for adults and Hetrazan for
cysticercosis

Prophylaxis:

- Control of intermediate host
- Proper sanitary system
- Hygienic habits



S



Stool analysis

What is scolex ?

What is rostellum ?

Describe a gravid proglottid ?

Name the types of proglottid.

Describe the life cycle of *Taenia* in man/pig with a word diagram.

What is measly pork ?

What is Cysticercus ?

What is Onchosphere ?

What is taeniasis ?