

Zoology  
B.Sc I Year Paper I Invertebrate  
UNIT - 4 Phylum Platyhelminthes

Topic – Taenia Solium

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# TAENIA SOLIUM

## Systemic position

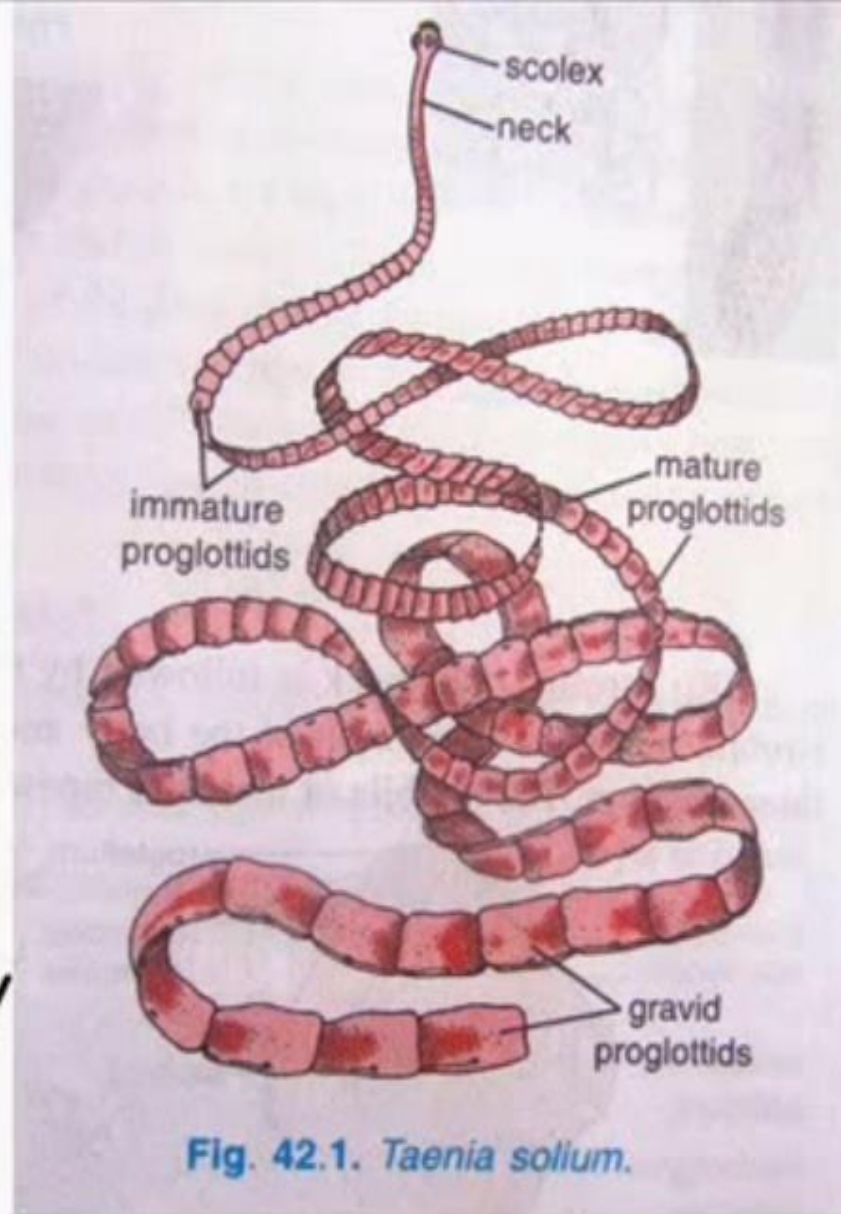
- ❑ Phylum: Platyhelminths
- ❑ Class: Cestoda
- ❑ Subclass: Eucestoda
- ❑ Order: Taenioidea
- ❑ Genus: *Taenia*
- ❑ Species: *solium*

## Habit and Habitat

- ❑ Adult lives in the intestine of man leading an endoparasitic life
- ❑ Life history completes in two hosts therefore called digenetic
- ❑ Man is primary host and pig is secondary host
- ❑ Various stages of the life history are passed in the body of secondary host except the adult one
- ❑ Goat, cattle, horse and monkey may also serve as secondary host
- ❑ Found in pork is eating places, either raw or improperly cooked, especially in European countries
- ❑ It adheres to mucous membrane lining of the alimentary canal with the help of scolex and causes injuries

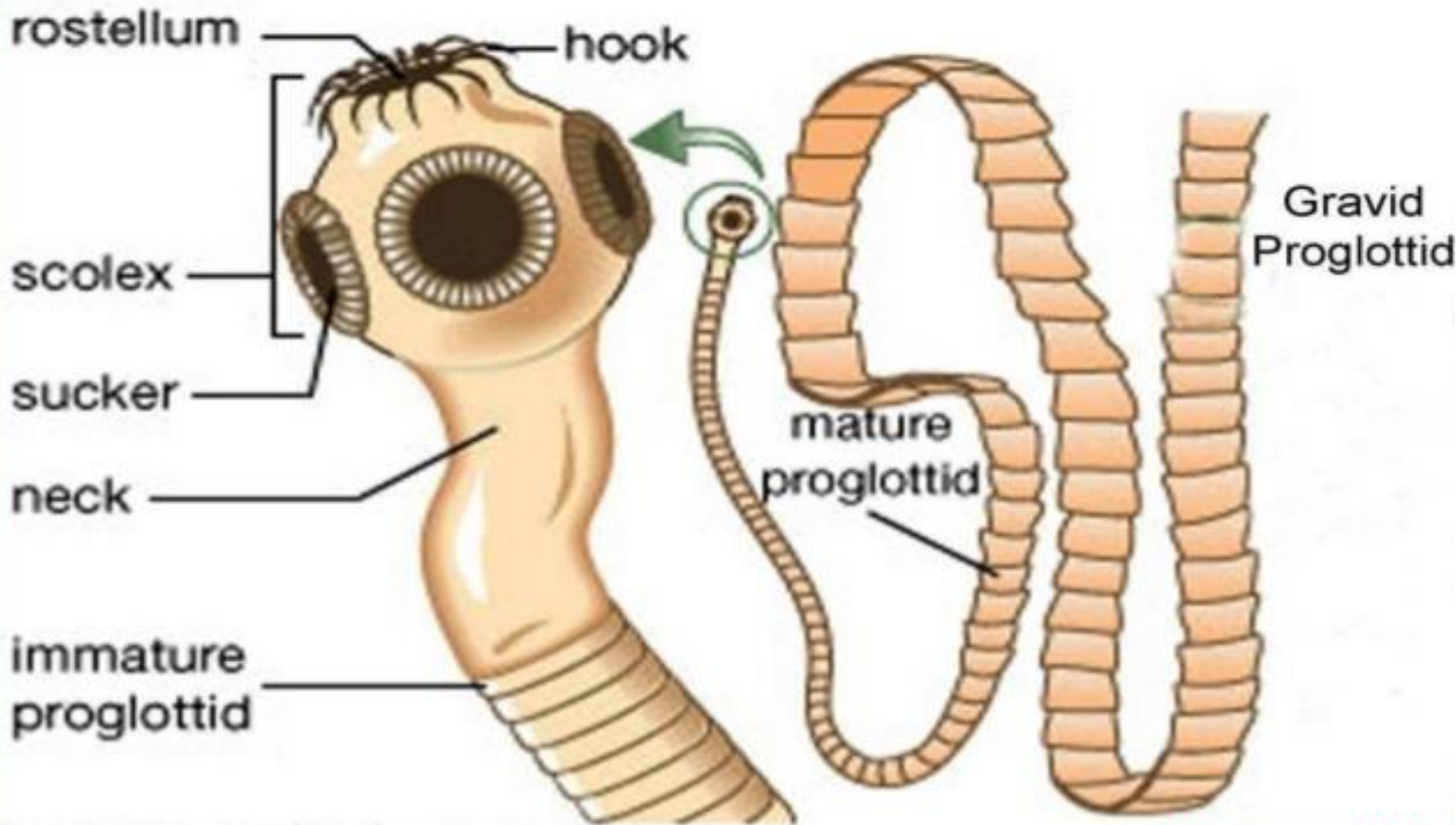
# Structure

- ❑ The long and short hooks alternate with each other
- ❑ The rostellum can be protruded slightly
- ❑ The scolex with its suckers and hooks is an organ of attachment to the intestine
- ❑ The scolex is, sometimes, wrongly referred to as 'head' but it cannot be the head because it is neither related to food-perception nor an organ of catching the food





# MORPHOLOGY



(Gracey, 1994).

## Structure: Strobila

- ❑ Strobila follows the neck
- ❑ It is flattened, ribbon-like
- ❑ Forms the main bulk of the body and consists of a series of proglottids arranged in a linear fashion
- ❑ Strobila of a mature tapeworm measures about three metres in length having 800 to 900 proglottids
- ❑ A proglottid is one complete unit of the body having a complete set of genitalium and surrounding tissue
- ❑ Proglottids are budded off in the neck region and pushed backwards due to addition of more proglottids in front
- ❑ Anterior proglottids are the youngest, while those at the posterior are the oldest
- ❑ Adjacent proglottids remain attached together by longitudinal muscles, excretory ducts and nerve cords

- ❑ According to the degree of development, the strobila includes 3 kinds : immature, mature and gravid
- ❑ I. Immature proglottids.
  - ❑ Comprise of about 200 anterior proglottids just behind the neck
  - ❑ Youngest, sexually immature and devoid of reproductive organs
  - ❑ Short, broader than long and rectangular in outline
- ❑ II. Mature proglottids
  - ❑ Lie after immature proglottids
  - ❑ Nearly 100-150 proglottids bear male reproductive organs only
  - ❑ As these proglottids are pushed back they develop female reproductive organs also



- ❑ Mature proglottids are hermaphrodite and they number about 300-400 proglottids, square in shape
- ❑ Each mature proglottid, on one side bears a tiny protuberance, the genital papilla
- ❑ There is a common genital pore at the tip of genital papilla
- ❑ Genital pores are situated alternately on the right and left sides in the successive proglottids
- ❑ A mature proglottid is a complete reproductive unit and produces eggs which are fertilized by its own sperms (self fertilization) or by those of other mature proglottids (cross fertilization)



## Ripe or gravid proglottids

- ❑ The oldest or last 150 to 350 proglottids at the posterior end of the body
- ❑ Longer than the breadth of the body
- ❑ All the male and female reproductive organs have degenerated except the highly branched uterus full of fertilized eggs
- ❑ Small groups of gravid proglottids regularly detach from the posterior end of strobila and pass out with the host's faeces
- ❑ Shedding of gravid proglottids is called apolysis
- ❑ Apolysis serves a twofold purpose: 1. it serves to transfer the developing embryos to the exterior, where they can be ingested by the secondary host, and 2. it attain enormous length due to continued proliferation in the neck region

# Body wall

- ❑ Layer of Body wall from surface are : i) tegument or cuticle, (ii) basement membrane, (iii) integumentary muscles, and (iv) parenchyma
- ❑ Cuticle is a thick resistant layer clothing the body and is enzyme resistant and consists of outer layer having fine thread-like spines called microtriches
- ❑ It serves the function of protecting internal organs and absorbs nourishment from the host's intestine. The microtriches help in increasing its surface area which facilitate absorption or nourishment from host's intestine and also perform anchoring role with the intestinal wall of the host
- ❑ The muscles of the body wall enable it to perform movements