

# TAENIASIS

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# Clinical Case

Anda adalah dokter yang bertugas di di salah satu Puskesmas di Kabupaten Samosir. Suatu kali seorang pasien lelaki 40 tahun mengeluh sering mendapati sepotong benda berukuran sekitar 1x0.5cm bewarna putih susu, kenyal dan bergerak aktif di dalam celana dalamnya.

# Learning Issues

1. Agent(s) of the disease
2. Nature of the disease
3. Risk factors
4. Complications
5. Management: diagnosis, treatment, prevention

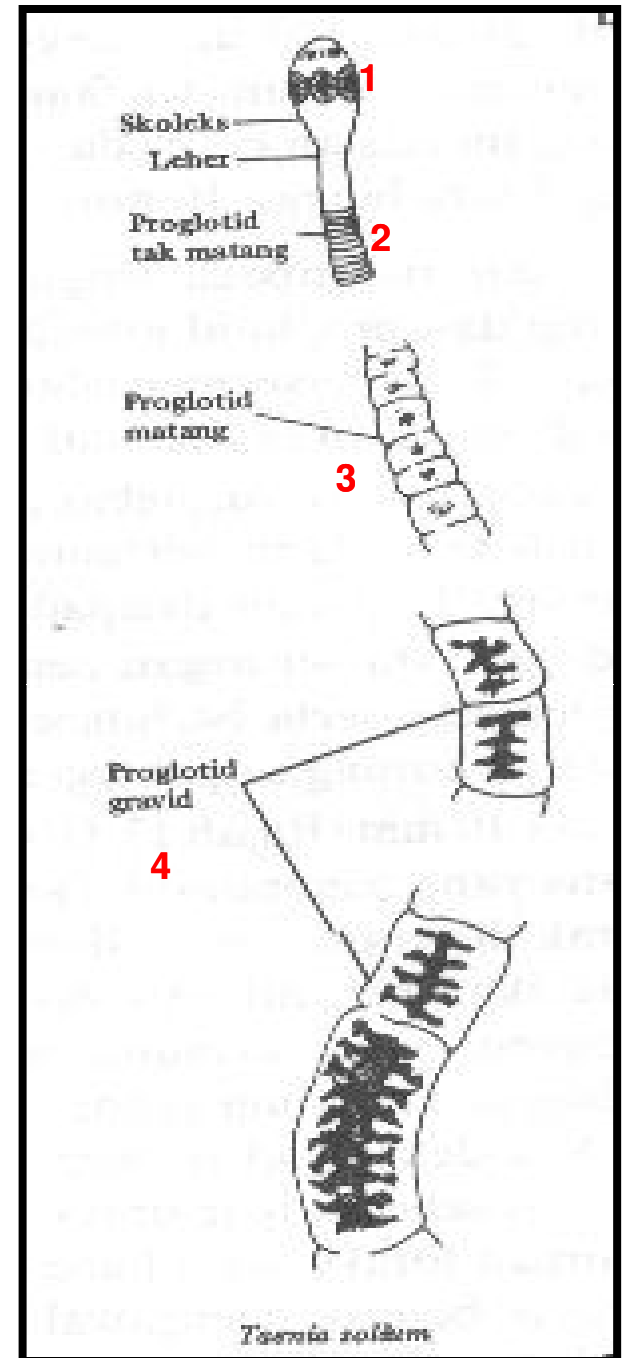
# Cestodes (tapeworm)

## General Morphology & Classification

# Morphology

- Tape-like
- Segmented
- Scolex (head)<sup>1</sup>
- Strobila, divided into proglottids (segments):
  - Immature proglottids<sup>2</sup>
  - Mature proglottids<sup>3</sup>
  - Gravid proglottids<sup>4</sup>
- Hermaphrodite
- Hooks and suckers
- GIT: nil
- Body cavity absent

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# Classification

- Intestinal cestodes:
  - *Taenia saginata*
  - *Taenia solium*
  - *Hymenolepis nana*
  - *Hymenolepis diminuta*
  - *Diphyllobothriidae*
- Zoonotic cestodes:
  - *Echinococcus granulosus*
  - *Dypilidium caninum*

# Taenia sp.

*Taenia saginata*  
*Taenia solium*

# *Taenia saginata*

## Beef tapeworm



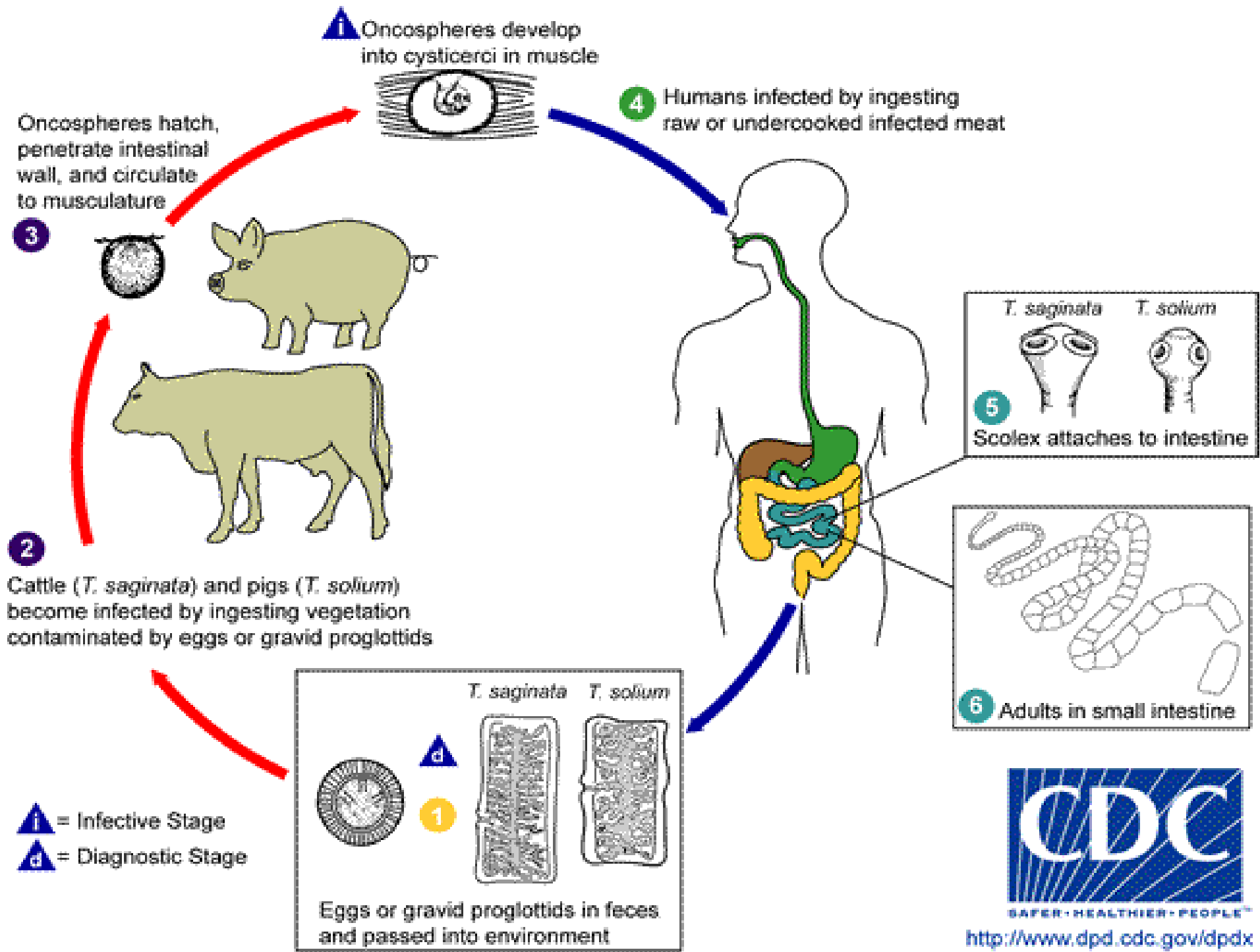
- Up to 1-2k proglottids
- Gravid segments crawl out from anus **voluntarily**
- **Habitat:** small intestine



# *Taenia saginata*

## Life cycle

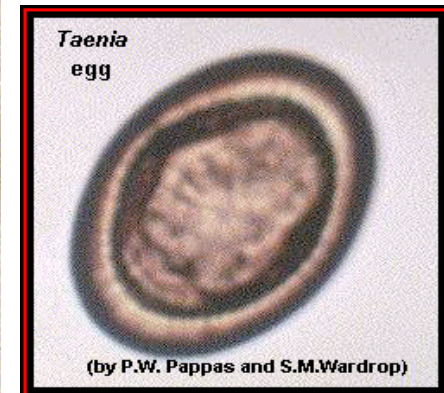
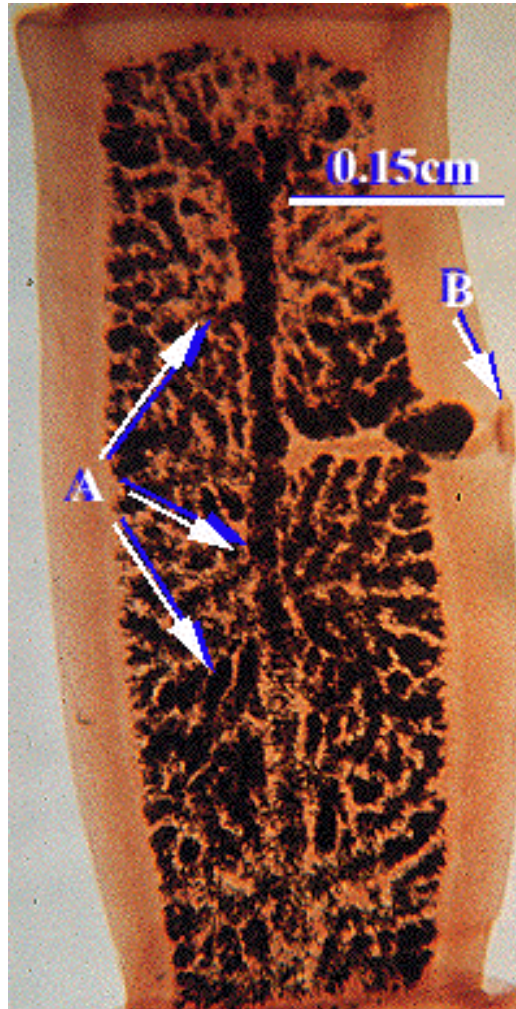
- **Infective stage:** cysticercus bovis in cattle meat
- **Route of infection:** ingestion
- **Dx stage:**
  - eggs in feces or anal swab
  - gravid segments



# *Taenia saginata*

## Morphology

- **Scolex:** 4 suckers
- **Gravid segment:**
  - 15-20 branches of uterus<sup>A</sup>
  - Genital pore: one of each segment in irregular site<sup>B</sup>
- **Egg** (viable up to 159 days):
  - Elliptical
  - Embryophore (thick shell with radial pattern)
  - Content: hexacanth embryo (oncosphere)



# *Taenia solium*

## Life cycle

- **Infective stage:**

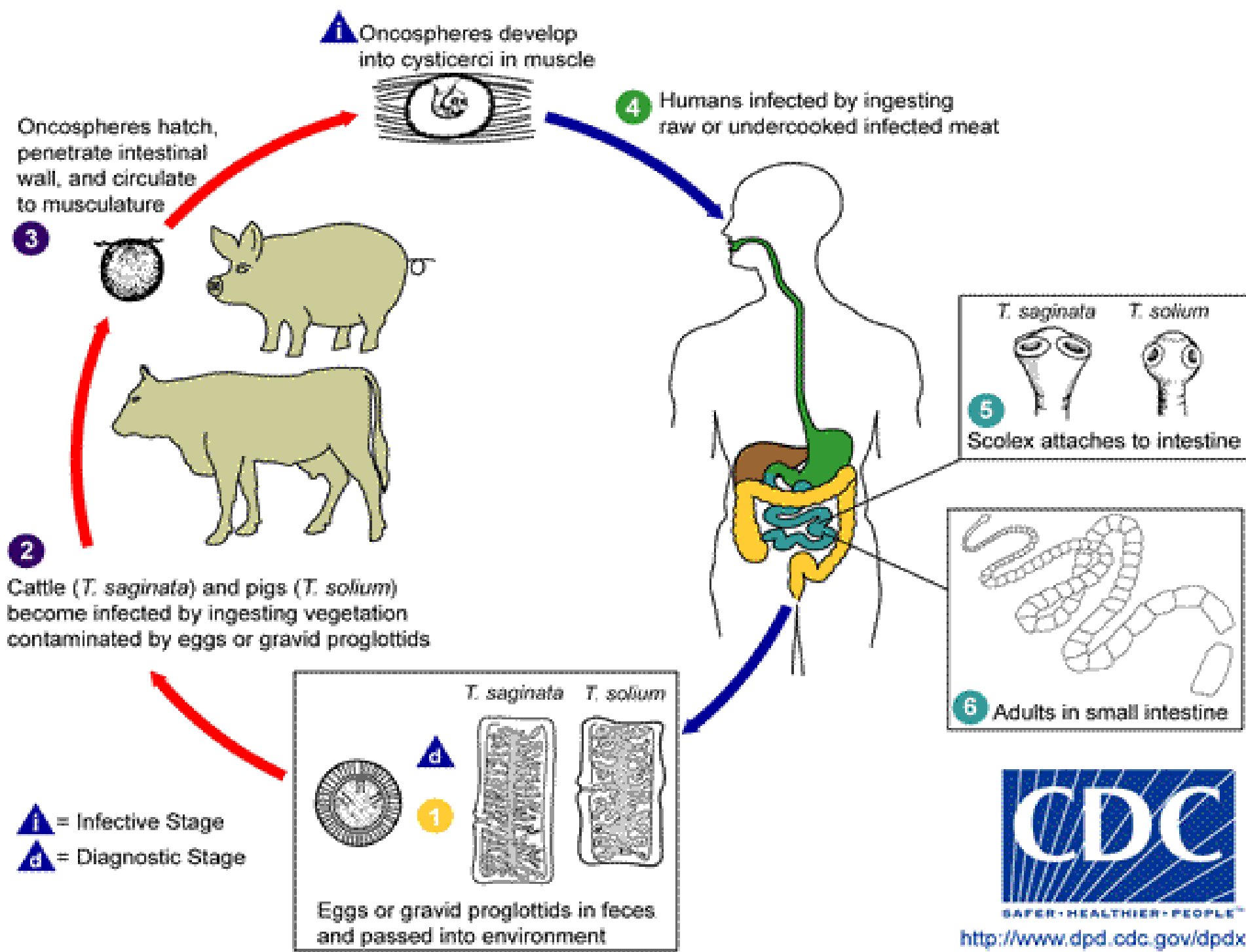
cysticercus cellulose in pork and or eggs

- **Route of infection:** ingestion

- **Dx stage:**

- eggs in feces or swab

- cysticercus cellulose from tissue biopsy



# *Taenia saginata*

## Larva

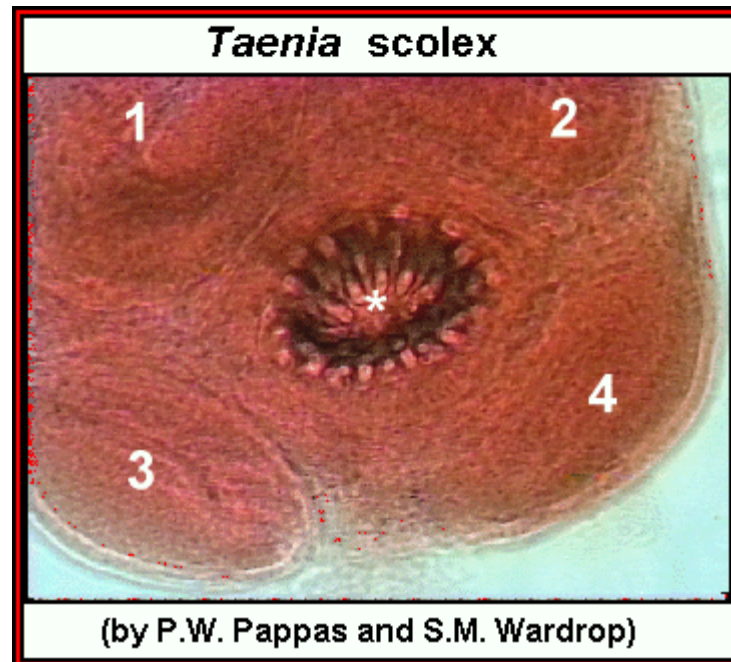
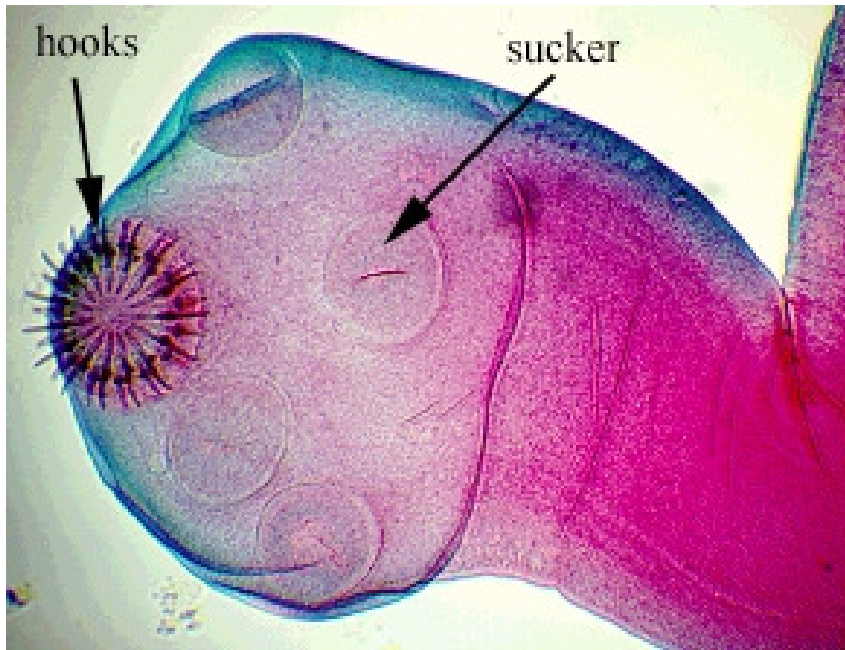
- Called **cysticercus bovis**, no hooks
- Invaginate in cattle muscles and tissues
- Ingested by human, evaginate in small intestine to become adult worm



# *Taenia solium*

## Scolex

- **Scolex:** 4 suckers, hooks, rostellum

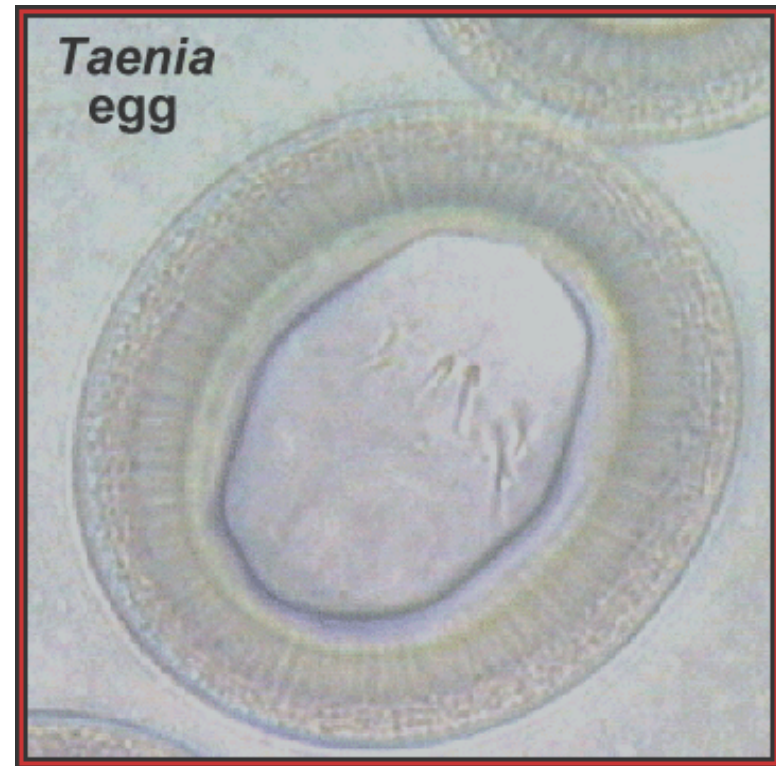
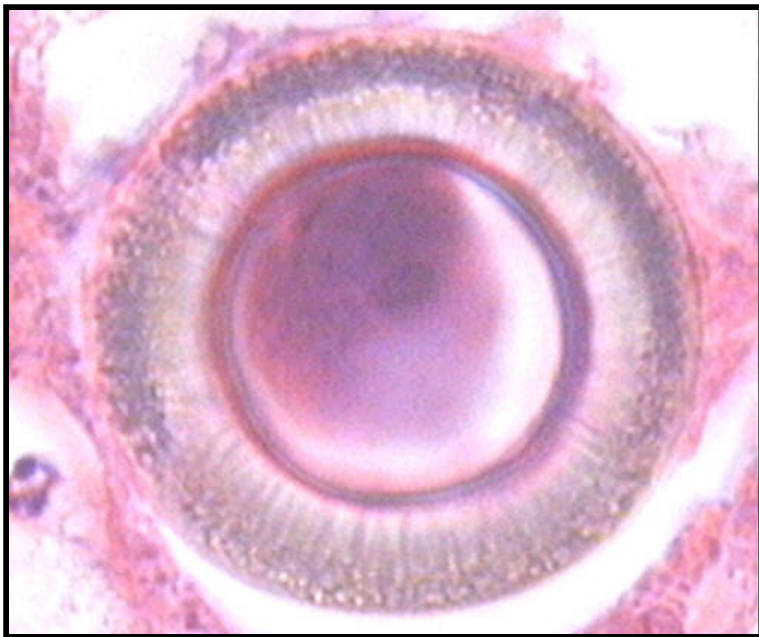




# *Taenia solium*

## Eggs

- Resembles the eggs of *Taenia saginata*

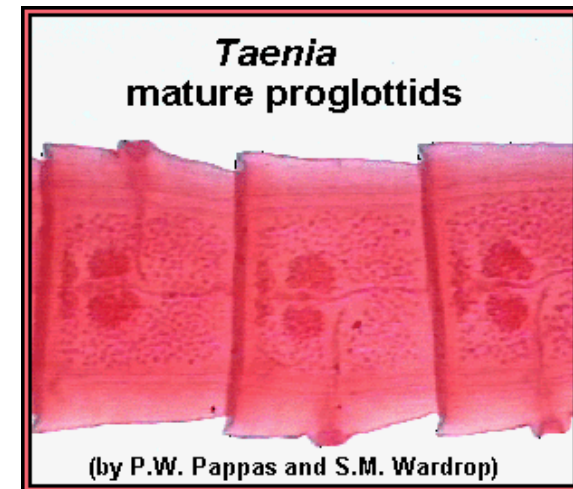
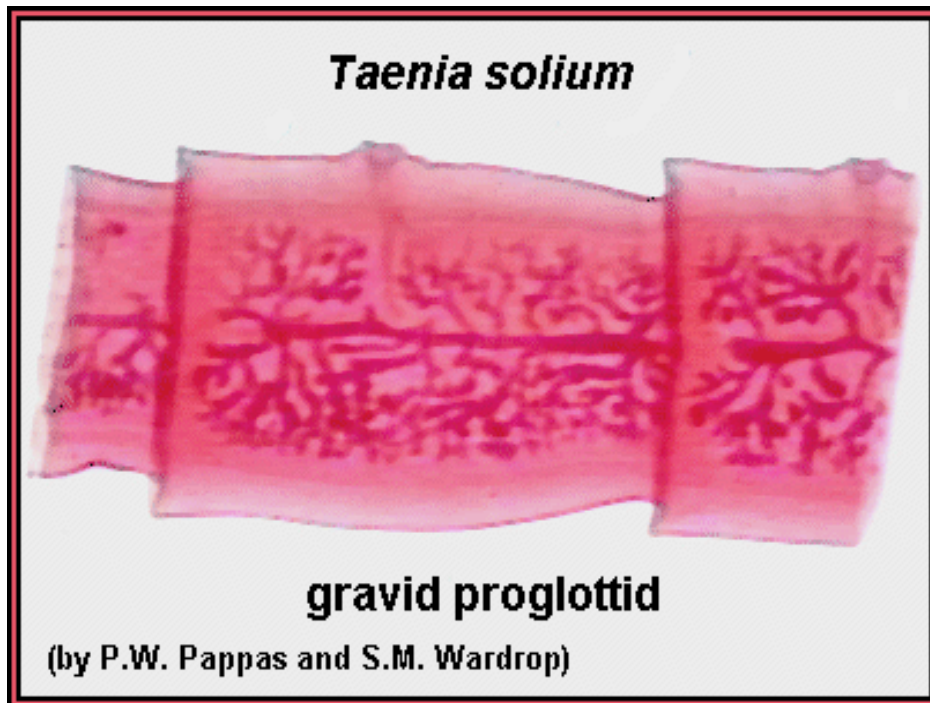




# *Taenia solium*

## Strobila

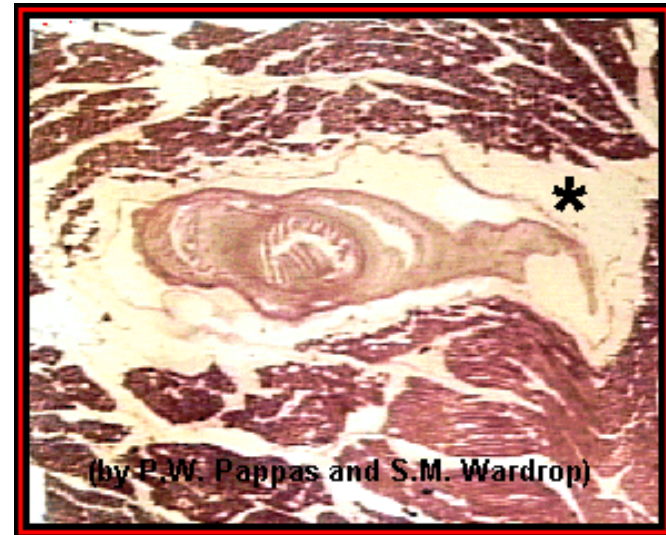
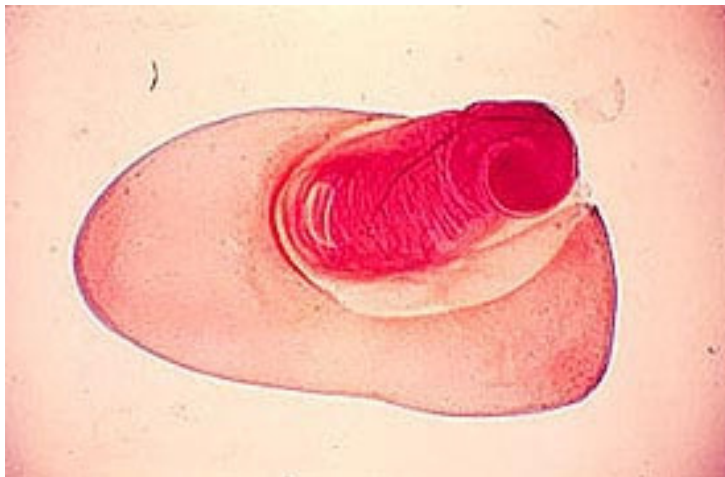
- **Strobila:**
  - 2-3 m long
  - less than 1k proglottids
  - proglottid: less uterine branches (7-12 pairs)



# *Taenia solium*

## Larva

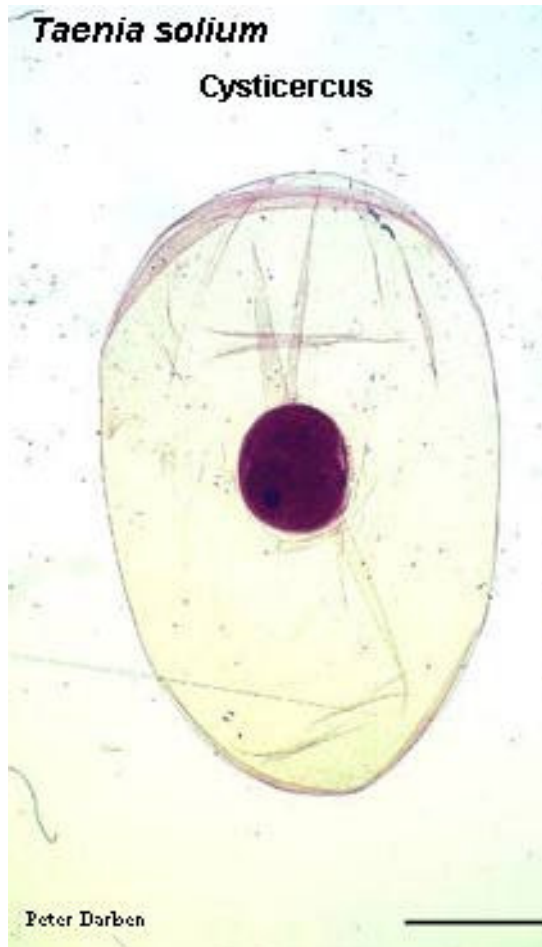
- Called **cysticercus cellulose**, six hooked
- Habitat:
  - human's muscles and tissues
  - Pig's muscles and tissues



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# *Taenia solium* Larva





# Clinical Manifestations

- **Taenia solium** may cause cysticercosis. The most severe cysticercosis is that which involve CNS (neurocysticercosis). Other sites are lungs, liver, and eyes.
- Neurocysticercosis might cause meningitis, epilepsy, dementia, and can be fatal.
- **Taenia saginata** does not cause cysticercosis. However, the voluntary excretion of the segments might have the patients uncomfortable and induce mental depression.

# Management

- Diagnosis is based on QDP (questionnaire of demonstration proglottids). Though possible, it's hard to get the eggs from fecal examination.
- Cysticercosis is found through radiologic examination

# Management

- The worms need to be expelled **completely** from the intestine. We need to be sure that not only have the proglottids, but also the scolex and neck been removed.
- Laxatives to expel proglottids
- Niclosamide
- Praziquantel 40mg/kgBW (single dose)
- Surgery for the cisticercosis.

# So...

1. Agent(s) of the disease?
2. Nature of the disease?
3. Risk factors?
4. Complications?
5. Management: diagnosis, treatment, prevention?