

## Family: *Dipylidiidae*

- Small to medium sized tapeworms of birds and carnivores. **Scolex** has **rostellum** with several rows of hooks. In each article there is a double ensemble of genital organs that open laterally. The **eggs are placed in capsules**.
- Larvovest is of the **cysticercoid type** and develops in invertebrates (flea, scorpion, slugs, etc.).
- Genus: *Dipylidium*

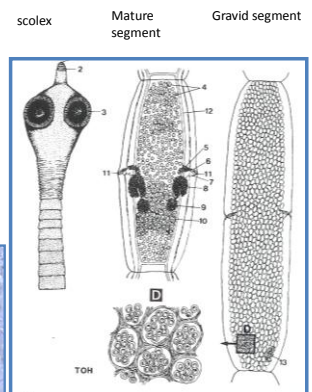
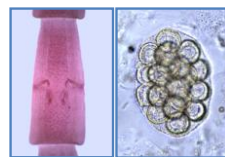


### *Dipylidium caninum*

- **Definitive Host:** dogs, and cats, humans, particularly children
- **Intermediate Host:** Fleas (*Ctenocephalides*, *Pulex*) and the larvae of dog lice (*Trichodectes canis*).
- **Geographic Distribution:** Cosmopolitan
- **Transmission to D.H.:** Ingestion of infected flea. Proglottids may creep about actively near the dog's anus.

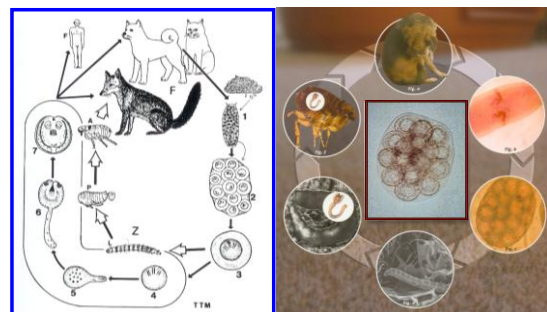
### *Dipylidium caninum*

Up to 50 cm

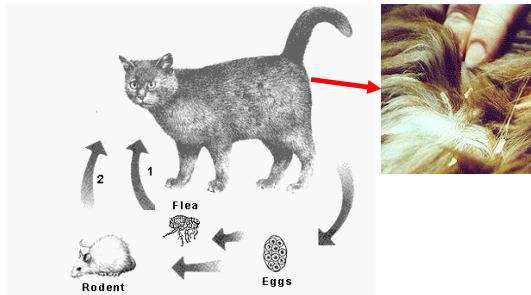


### *Dipylidium caninum* – life cycle

Prepatent period  
20 days



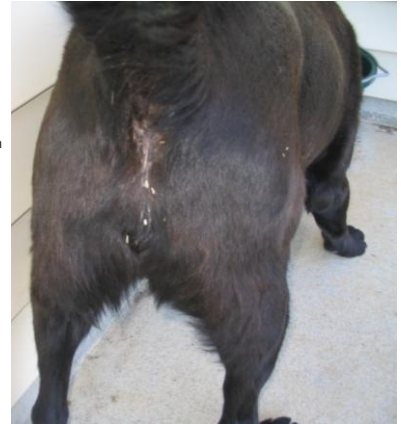
### *Dipylidium caninum* – cats



### *Dipylidium sexcoronatum* - cats

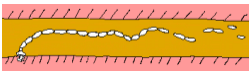
#### Clinical signs:

- Called: sleighing
- Weight loss
- Matt, brittle fur
- In a massive infection
- Discomfort
- Nervous symptoms
  - ✓ vomit
  - ✓ convulsions

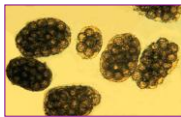


#### Diagnosis

- Visual- finding proglottids



- Eggs are not in faeces



Gravid proglottids

### *Dipylidium caninum*

- **Diagnosis:** Proglottids in feces
  - Shaped like cucumber seed
  - Move like a fluke
  - Can crawl out of anus
- **Prevention:** Proper flea control for dogs
- **Notes:** There are hundreds of species in this family
  - Most parasitize birds and non-human mammals

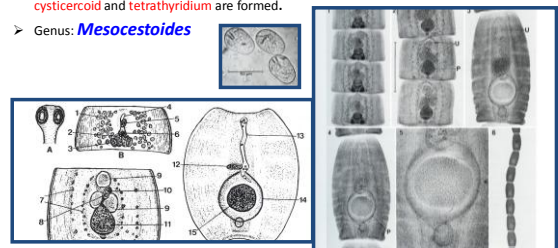


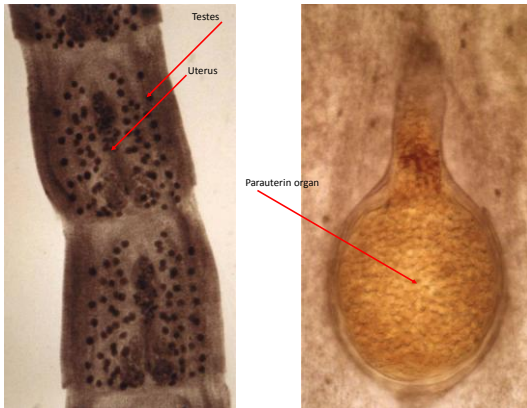
**THERAPY:**  
Praziquantel (Droncit)  
Epsiprantel (Cestex)



### Family: Mesocestoididae

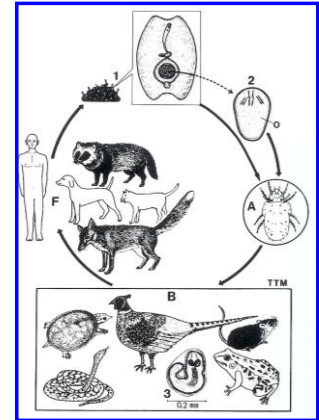
- Small to medium size tapeworms of carnivores and birds.
- Skolex has four distinct suckers, one set of genital organs.
- Rostelum with hooks missing. In pregnant cells, eggs are placed in a typical **paruterine organ**.
- They need **two intermediate hosts**, invertebrates and vertebrates, where **cysticercoid** and **tetrathyridium** are formed.
- Genus: **Mesocestoides**





### Life cycle *Mesocostoides lineatus*

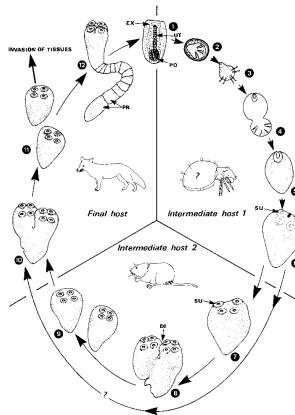
Prepatent periode 16 - 20 days



### *Mesocostoides lineatus*



LC: 1. IH = invertebrates  
2. MH = small mammals and reptiles → larva di (tetra) thyridium - possibility of **asexual reproduction** in both IH and DH (longitudinal division of larvae)



### Pathogenesis and clinical signs

- **Zoonosis** - Severe diarrhoea in human infection
- Weak infection intensity - **asymptomatic** course;
- Strong intensity - **enteritis, digestive disorders**;
- The presence of tetrathiridia in dogs and cats and their ability to reproduce asexually causes **severe peritonitis, pleuritis** and **ascites**;

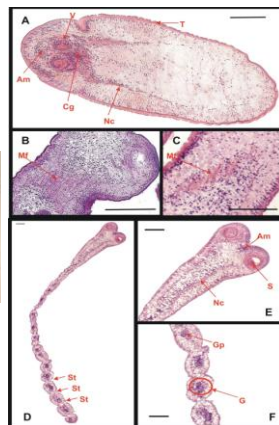
### Diagnosis, therapy and prevention

- Coprological - finding proglottids and eggs
- Praziquantel, niclozamide
- Environmental sanitation, rodent destruction, insecticides

### *Mesocostoides corti*

Dog, cat, skunk, wild carnivores, mice and the like.

Short wormtape - 4-8 cm



### Taeniidae

#### *Taenia*

##### *Taenia hydatigena*

##### *T. multiceps*

##### *T. ovis*

##### *T. pisiformis*

##### *T. serialis*

##### *T. cervi*

##### *T. krabbei*

##### *T. taeniaeformis*

##### *T. saginata*

##### *T. solium*

##### *Echinococcus*

##### *Echinococcus granulosus*

##### *E. multilocularis*

##### - cysticercus tenuicollis

##### - coenurus cerebralis

##### - cysticercus ovis

##### - cysticercus pisiformis

##### - coenurus serialis

##### - cysticercus cervi

##### - cysticercus tarandi

##### - cysticercus fasciolaris

##### - cysticercus bovis

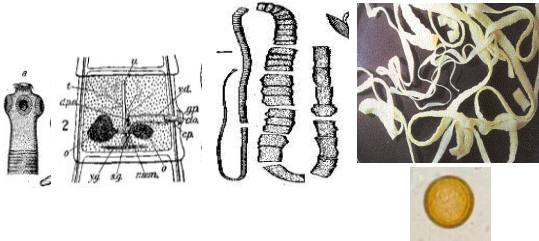
##### - cysticercus celulosae; cysticercus racemosus





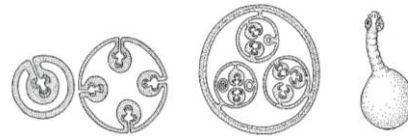
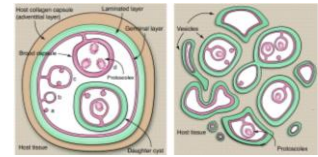
## Family: Taeniidae

The **Taeniidae** are usually **large tapeworms**. The gravid proglottids are longer than they are wide.  
The rostellum may be absent, but it usually is present and armed with a double row of hooks.

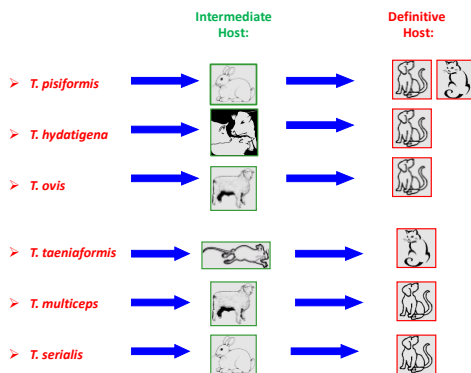


## The larvocyts (metacestodes) are:

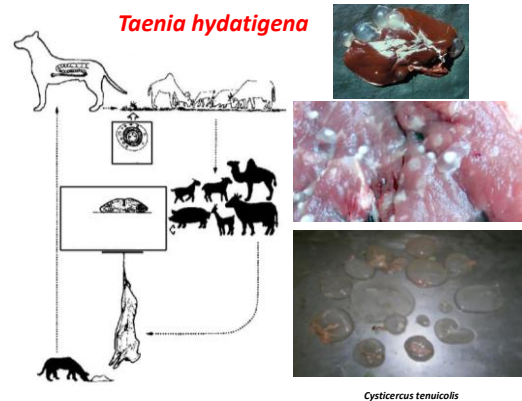
- Cysticercus
- Strobilocercus
- Coenurus
- Echinococcus (hydatid cyst)
- Alveococcus



## HOSTS FOR DIFFERENT TAENIA SPP.



## *Taenia hydatigena*



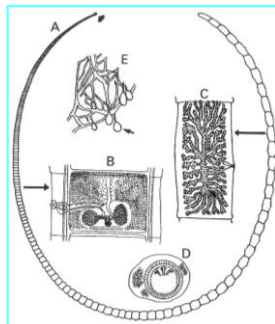
## *Taenia hydatigena*

**Distribution:** cosmopolitan

**Host:** small intestine of dogs, wolves

**IH:** domestic and wild ruminants, pigs

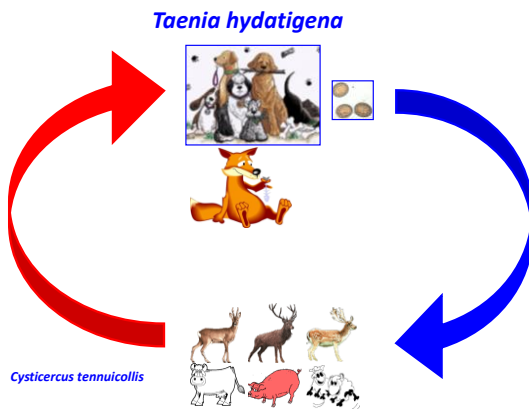
**Morphology:** up to 6 m, rostellum with 33 - 44 hooks



## *T. hydatigena*



- Large tapeworm of dogs
- Scolex with non-retractable armed rostellum and 4 suckers
- Strobila made of rectangular proglottids with irregularly alternating unilateral genital pores.
- Larval tapeworms of sheep, goat, cattle, pig

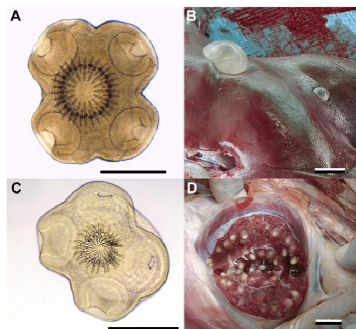


## Pathology - FH

- **Definitive Host (Dog)**
- In **FH** the *Taenia* tapeworms attach to the intestinal walls but cause only **mild inflammation** at the site of attachment.
- As a result, most tapeworm carriers show no symptoms (asymptomatic)

- Changes - oncospheres and young forms of cysticerci during migration;
- Traumatization of intestinal mucosa;
- Traumatization of liver parenchyma;
- **Hepatitis traumatica**
- ***Cysticercosa acuta*** – mortality;
- **liver cirrhosis**
- migration of oncospheres to the lungs - **inflammation**;
- **Peracute course** - mortality without symptoms;
- Elevated temperature, pulse, breathing;
- Weakness digestive disorders;
- Palpation - sensitive liver and peritoneum;
- Dg: post mortem
- IH – no therapy

## Pathology - IH



*Cysticercus tenuicollis*

## Diagnosis

- **Definitive host (dog)**
  - Rectangular segment in feces often presented by the client
  - Spherical ova with striated shell, when segment is squashed or expressed
  - Clinical Signs: Usually no signs, occasionally dog drags tail
- **Intermediate Host (Sheep)**
  - *Taenia hydatigena* = *Cysticercus tenuicollis*: necropsy.

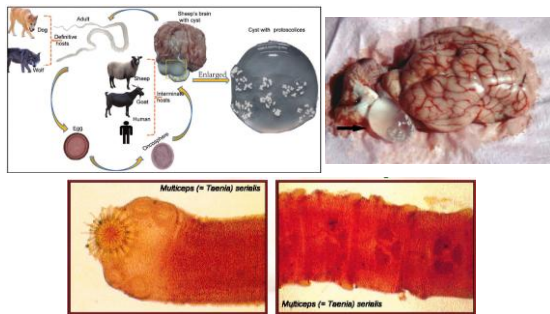
## Treatment

- **Definitive Host (Dog)**
  - Fenbendazole (*Panacur*)
  - Praziquantel (*Droncit*)
  - Epsiprantel (*Cestex*)
- **Intermediate Host (Sheep)**
  - *Taenia hydatigena* = *Cysticercus tenuicollis*: rely on control measures.

## Control

- Restrict canine access to sheep pastures.

## *Taenia multiceps* (*Coenurus cerebralis*)



## *Taenia multiceps*

**Morphology:** up to 1 m,

**FH** – dogs and Canidae

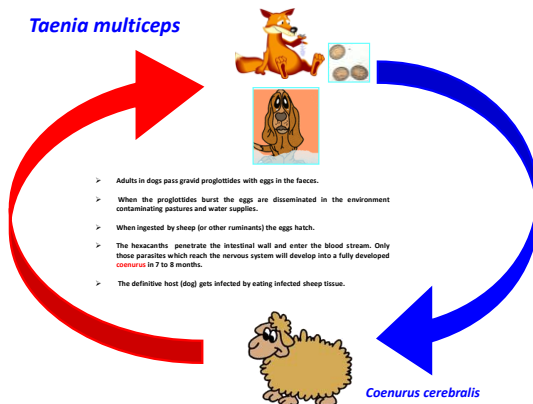
**IH** – sheep, goats, human ( till know 54 cases – Africa, France, England, USA)

***Coenurus cerebralis*** – 5 cm and more

**After 6-8 months** in the brain and spinal cord



## *Taenia multiceps*



## Clinical signs

- **Coenurosis** can occur in both an **acute** and a **chronic** disease form.
- **Acute coenurosis** occurs during the migratory phase of the disease, usually about 10 days after the ingestion of large numbers of tapeworm eggs. Young lambs aged 6-8 weeks are most likely to show signs of acute disease.
- In sheep, the migrating larvae may leave reddish or gray purulent tracks in the brain, or cause meningoencephalitis. More mature larvae can compress the tissues of the brain or spinal cord or block the flow of cerebrospinal fluid (CSF).
- The signs are associated with an **inflammatory** and **allergic reaction**.
- There is transient pyrexia, and relatively mild neurological signs such as listlessness and a slight head aversion. Occasionally the signs are more severe and the animal may develop encephalitis, convulse and die within 4 - 5 days.

## Clinical signs

- **Chronic coenurosis** typically occurs in sheep of 16-18 months of age.
- The time taken for the larvae to hatch, migrate and grow large enough to present nervous dysfunction varies from **2 to 6 months**.
- The earliest signs are often behavioural, with the affected animal tending to stand apart from the flock and react slowly to external stimuli.
- As the cyst grows, the clinical signs progress to **depression, unilateral blindness, circling, altered head position, incoordination, paralysis and recumbency**. Unless treated surgically, the animal will die after recumbency.

## Clinical signs

- As the cyst grows, the clinical signs progress to **depression, unilateral blindness, circling, altered head position, incoordination, paralysis and recumbency**. Unless treated surgically, the animal will die after recumbency
- The chronic stages develop as a result of increased destruction of brain and spinal cord tissue as the coenurus grows.
- The neurological clinical signs are recognised as **"gid"** or **"staggers"** and are dependent on the location of the cyst in the central nervous system.

## Diagnosis

- Infected dogs pass *Taenia*-type eggs in their faeces.
- Sheep at the chronic stage of the infection may show circular movements, jerky movements or staggering gait.

## Control

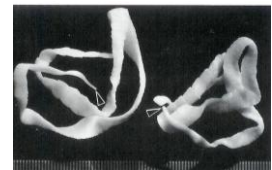
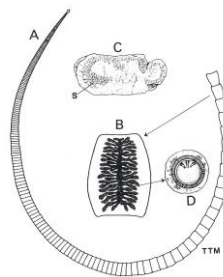
- Treat dogs regularly for tapeworms.
- Dogs should not be fed uncooked sheep carcasses or viscera

## COENUROSIS OF RABBITS, HARES

- Tissue cestodosis characterized by **inflammation of subcutaneous and connective tissue**;
- *Taenia serialis* (syn. *Multiceps serialis*) - dogs and other canine carnivores.
- 20-70 cm, on head is distinctive rostellum with 26-32 hooks.
- The development of tapeworms is indirect, via IH - lagomorphs - Coenurus serialis larvae - in the **subcutaneous and intramuscular connective tissue** of hares, rabbits, but also squirrels, goats and rarely in humans;
- Numerous scholarships in Coenur are arranged in a single line, which is why the name serialis.

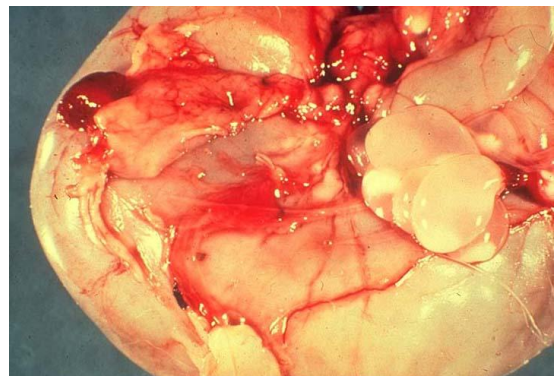
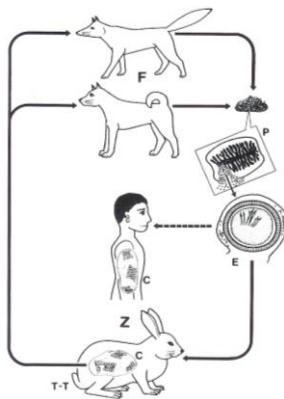
Coenurosis is zoonosis, **larvocyst of *T. serialis* may cause human coenurosis.**

## *Taenia serialis*



- **Morphology:** up to 72 cm,
- **FH** – dogs and Canidae
- **IH** – lagomorph, in subcutaneous and intramuscular connective tissues **Coenurus serialis** – 4 cm or larger

## Life cycle





**Pathogenesis**

- Coenuri under the skin; in the peritoneal cavity, brain, liver, and other organs.

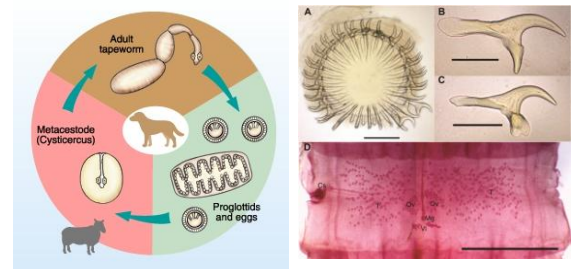
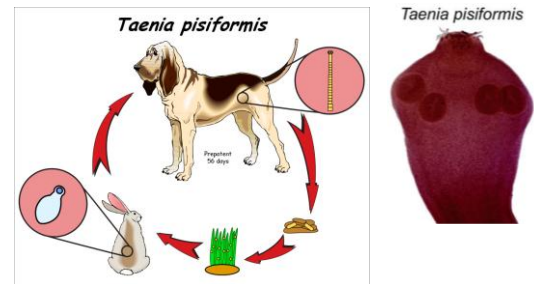
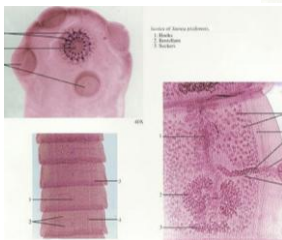
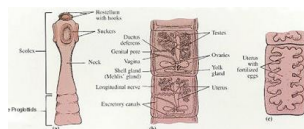
**Symptoms**

- The disease proceeds subclinically, with no apparent symptoms, cysts that localize in skeletal muscle can compromise the mobility of rabbits, especially if there is a large number.
- Under the skin, we can see the debris, especially in the groin area.

**Diagnosis and differential diagnosis**

- The diagnosis can be estimated after palpation of subcutaneous cysts; to post mortem by finding the coenures. We differentiate diagnosis of other tissue pathodoses.

**Prevention and control** as in cysticercosis.

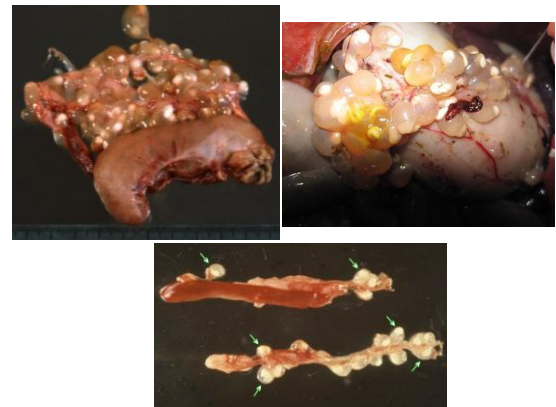
***Taenia ovis* (*Cysticecus ovis*)*****Taenia pisiformis* (*Cysticercus pisiformis*)*****Taenia pisiformis***

**Distribution:** cosmopolitan

**Host:** small intestine of dogs, wolves

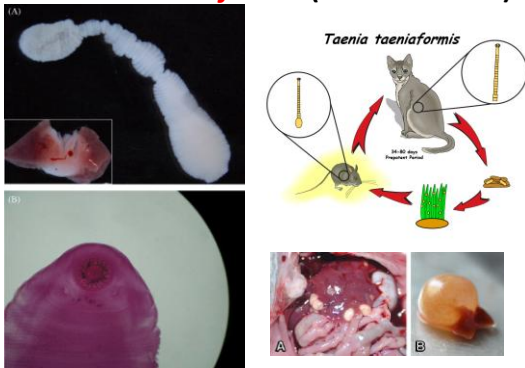
**IH:** lagomorph, rodents

**Morphology:** up to 200cm, rostellum with 34 – 48 hooks





## *Taenia taeniaeformis* (*Strobilocercus*)



## *Taenia taeniaeformis*



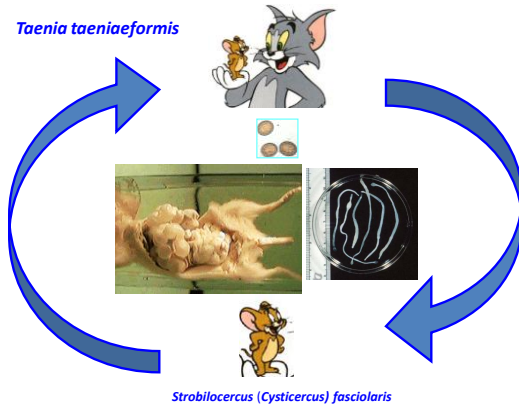
Morphology: up to 60 cm

**Urban cycle:** involves domestic cat (FH) and house and field mice and rats (IH)

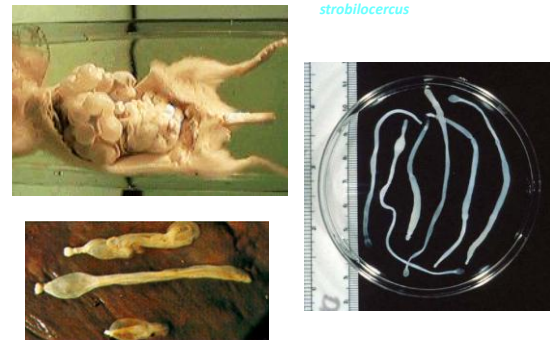
**Sylvatic cycle:** bobcats (North America) (FH) and wild rodent (IH)

After 30 – 42 days *Cysticercus fasciolaris* (*Strobilocercus*) develops

## *Taenia taeniaeformis*



*Strobilocercus* (*Cysticercus*) *fasciolaris*



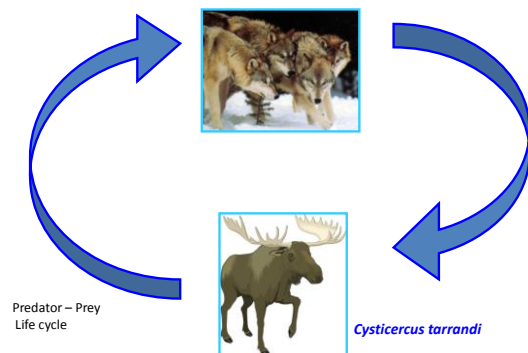
*strobilocercus*

## *Taenia krabbei* (*Taenia ovis krabbei*)

➤ **FH:** wolves, coyotes, dogs, bobcat, lynx, black bear and grizzly bear

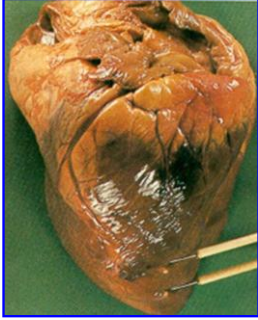
➤ **IH:** herbivore (red deer, moose, wapiti (elk), caribou, mule deer) *Cysticercus tarandi*

## *Taenia krabbei*

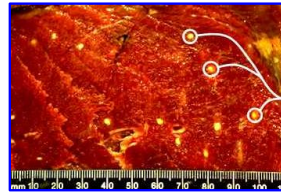


Predator – Prey  
Life cycle

*Cysticercus tarandi*



*Cysticercus tarrandi (cervi)*



*Cysticercus tarrandi* - moose heart, muscles