

Al-Mustaqbal University college
Department of pharmacy



2st Class, 2st Semester

PARASITOLOGY

Lab : 6

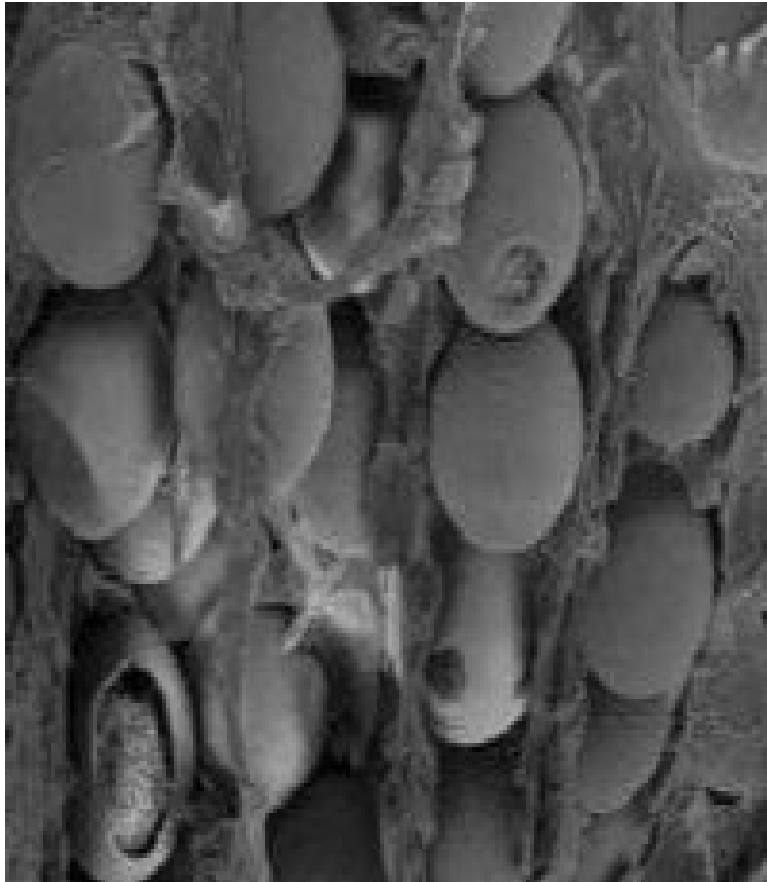
Asst. Lec. Noor Muhsen

Hymenolepis Nana - Dwarf Tapeworm



- *Hymenolepis nana* is the most common tapeworm in humans. It is also known as the dwarf tapeworm due to its particularly small size (adults are only 15–40 mm long).
- The disease, hymenolepiasis is found worldwide.
- In temperate zones children
- The disease is somewhat common in the eastern Europe.

Egg



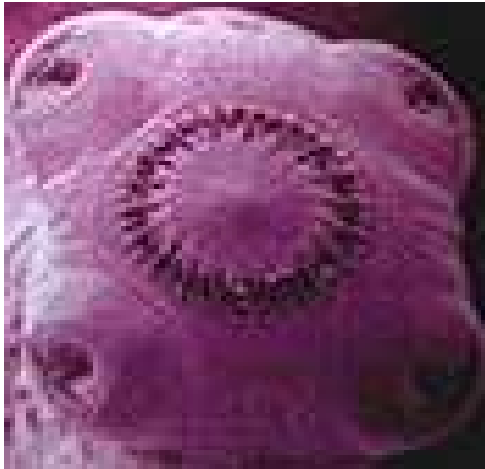
- *H. nana* **egg** is colourless, almost transparent, oval, 30–50 μm (micrometers) in diameter, has polar filaments. When shed in stool they are immediately infective and survive up to 10 days in the external environment, they are embryonated and have a 6-hooked oncospheres inside the shells.



Scientific classification

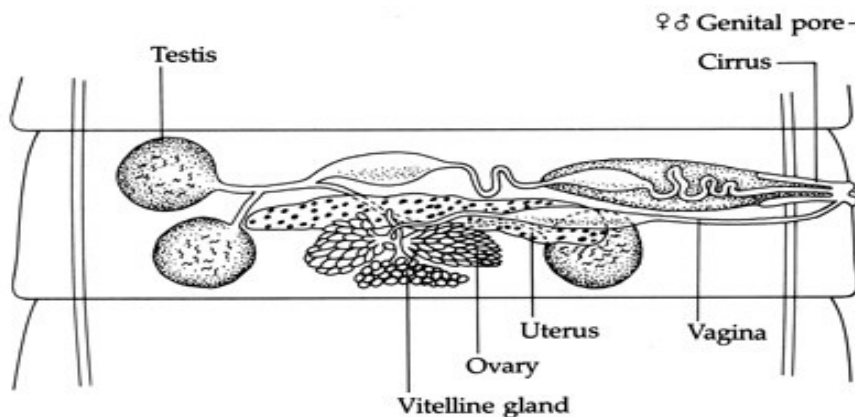
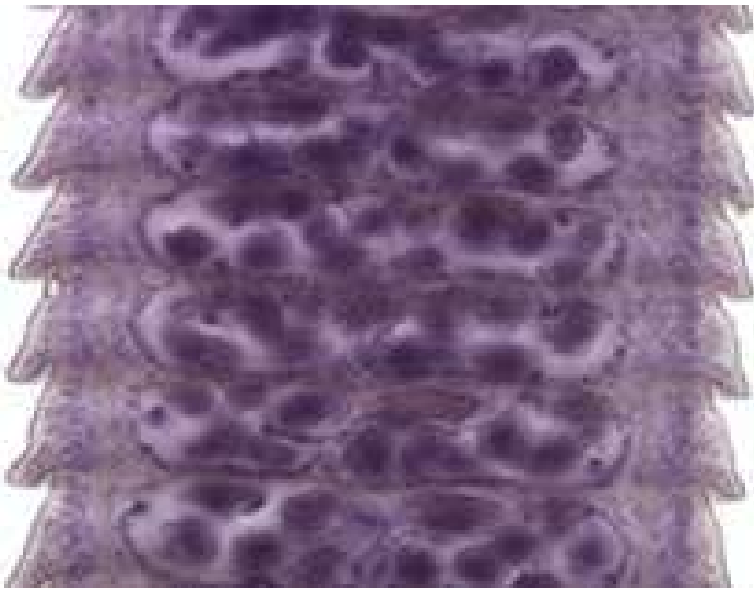
- Kingdom: Animalia
- Phylum: Platyhelminthes
- Class: Cestoda
- Order: Cyclophyllidea
- Family: Hymenolepididae
- Genus: *Hymenolepis*
- Species: *H. nana*

Scolex



- **Scolex** is small, 0.3 mm in diameter, globular (rounded), cup-like, situated at the anterior end, has four suckers and retractile rostellum with a single row of 20–30 hooks.

Proglottids.



- Gravid (mature, full of eggs) **proglottids** are 0.2–0.3 mm long and 0.8–0.9 mm wide. Proglottid is filled with eggs, uterus is not visible. Each proglottid has both male and female reproductive organs making
- *Hymenolepis nana* hermaphroditic.
- A proglottid copulates with itself or with other segments of the same individual or nearby
- *Hymenolepis nana* tapeworms. Proglottids usually disintegrate in the gastrointestinal tract and are rarely present in the feces.

Symptoms:

- Hymenolepiasis is usually without symptom in adults.
- But prolonged infection or multiple tapeworms especially in children can cause more severe symptoms.
- The worms eat your food and cause inflammation of the intestinal mucosa. Hymenolepiasis **symptoms** sometimes include:
 - ✓ anal itching
 - ✓ diarrhea (can be bloody)
 - ✓ headache
 - ✓ insomnia
 - ✓ nausea
 - ✓ stomach ache
 - ✓ vomiting
 - ✓ weakness
 - ✓ weight loss.



Diagnosis:

- **diagnosis** by identifying tapeworm eggs in stool.
- Sometimes many stool specimens are needed to make the diagnosis.
- *Hymenolepis nana* starts laying eggs within a few weeks of the start of the infection and only after that it is possible to find eggs.
- Adult worm can be identified during endoscopic examination.



Hymenolepis Nana, adult, stained mount.

Treatment:

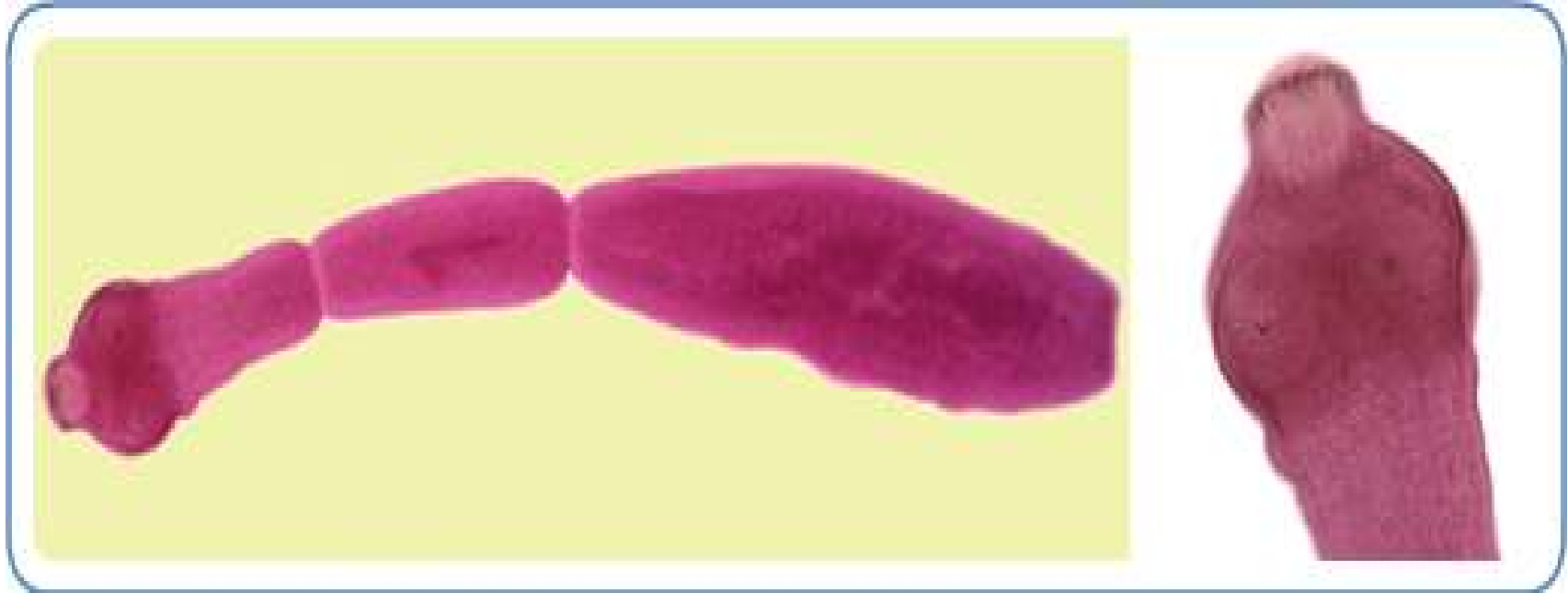
- Hymenolepiasis is usually treated with a drug called *praziquantel* which causes the tapeworm (both adults and larvae) to dissolve.
- A single dose of praziquantel has an effectiveness of 96 %.
- If praziquantel is not available, *niclosamide* or *albendazole* can be used instead.

Echinococcus

The Organism Cestode parasites Family **Taeniidae**

Currently recognized species

- *Echinococcus granulosus*
- *Echinococcus multilocularis*

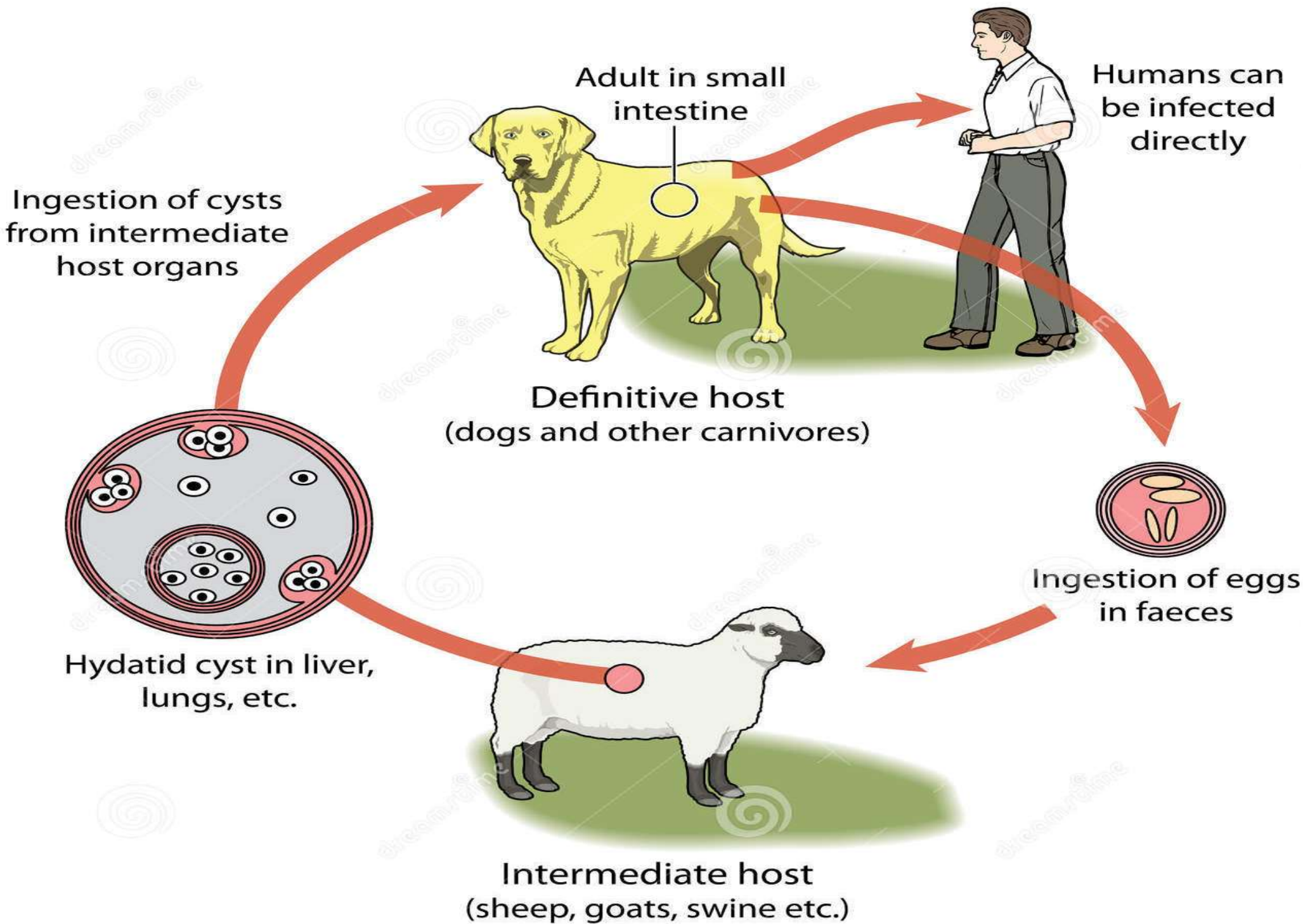


Scientific classification

- Kingdom: Animalia
- Phylum: Platyhelminthes
- Class: Cestoda
- Order: Cyclophyllidea
- Family: Taeniidae
- Genus: Echinococcus
- Species : *E. granulosus* , *E. multilocularis*

Transmission: *E. granulosus*

- **Definitive hosts**
- Canids
- Felids
- **Intermediate hosts**
- Herbivores
- Humans



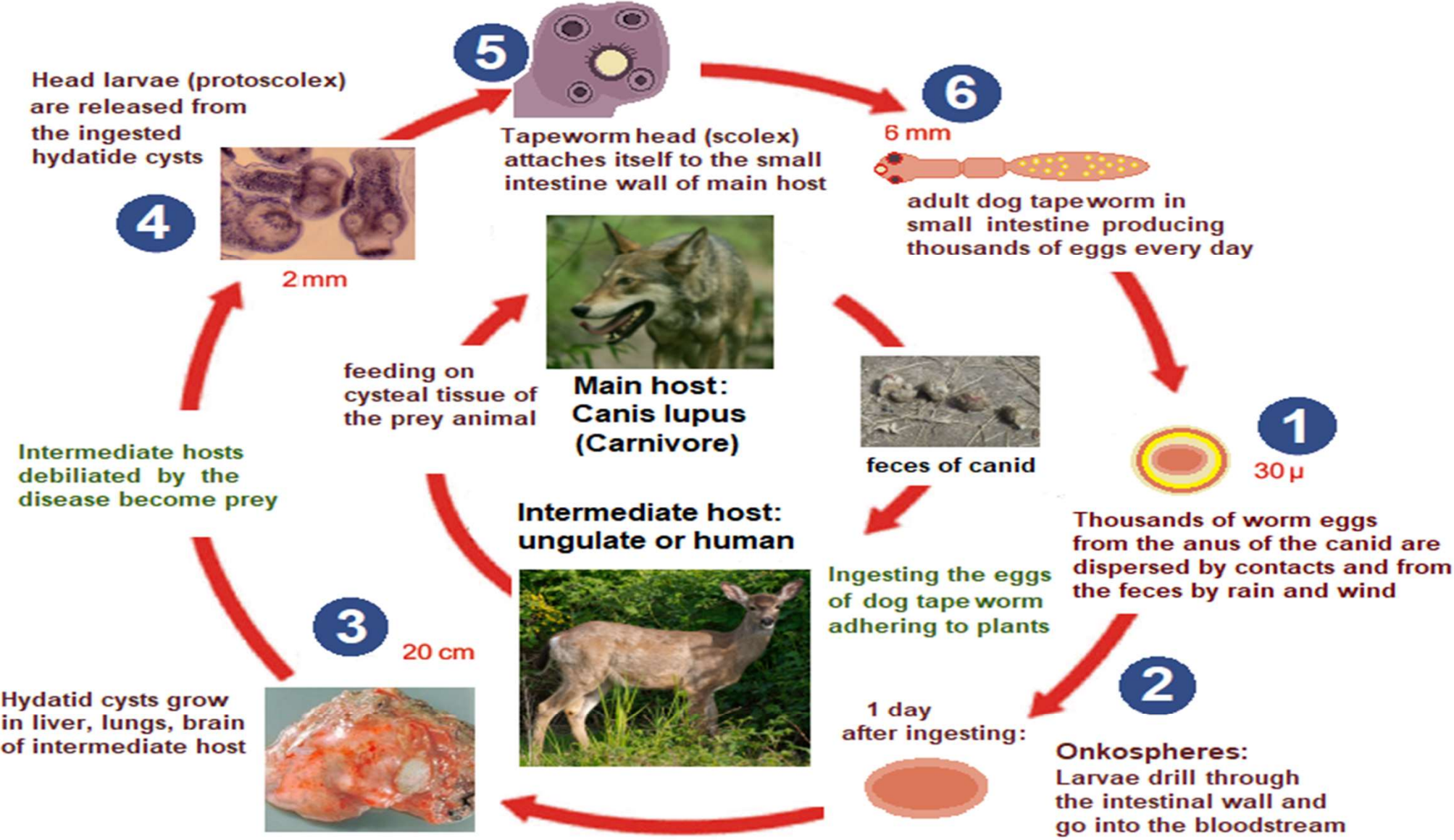
Disease in Humans: *E. granulosus*

- the disease called **Hydatid cyst**.
- May be asymptomatic
- Usually one cyst present
- Cyst location
- 60 to 70% in liver
- 20 to 25% in lungs
- Symptoms dependent on cyst location

Transmission: *E. multilocularis*

- **Definitive hosts**
- Wild carnivores (e.g., fox)
- Domestic dogs and cats
- **Intermediate hosts**
- Small mammals (rodents)
- Humans

E. multilocularis

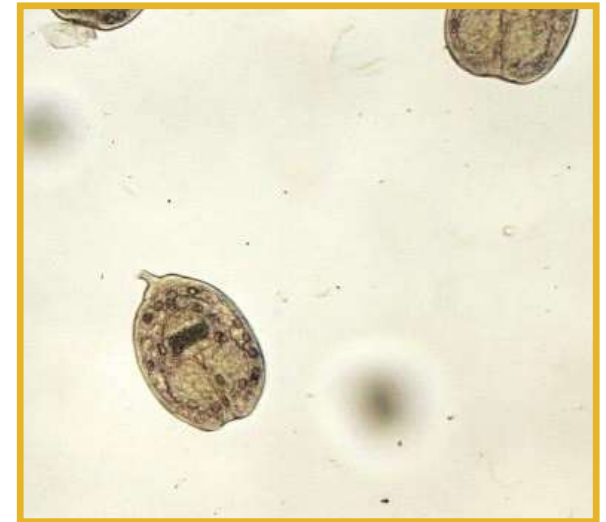


Disease in Humans: *E. multilocularis*

- Cysts usually found in liver
- Cysts not enclosed within membrane
- Invade surrounding tissues
- Disease is progressive and malignant
- May be asymptomatic if cyst dies early in development

Diagnosis

- Imaging techniques
 - Ultrasound, radiology
- Biopsy
- Detection of protoscolices
 - Cyst fluid, sputum
- PCR
- Serology



Treatment

- Surgical removal of cysts
- May not be possible to remove cyst depending on size and location
- Anti-parasitics