

Lab 3

Phylum: Platyhelminths

Class: Cestoda

Order: Cyclophyllidea

Family: Hymenolepididae

Hymenolepis nana

Hymenolepis diminuta

Family: dilepididae

Dipylidium caninum

Hymenolepis nana (dwarf tape worm)

Disease: hymenolepiasis, hymenolepidosis

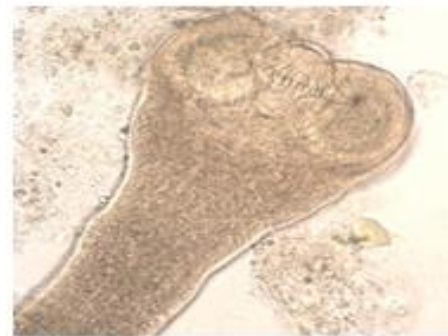
Morphology:

- the smallest human adult tape worm usually 20-40 mm. in long.
- Scolex has 4 suckers and retractable armed rostellum.
- Mature segment contains 3 round testes, bilobed ovary lies posteriorly between the testes with compact vitelline gland, and unilateral genital pore lie on the same side of each segment.
- Gravid segments contain a sac like uterus filled with eggs.
- Eggs: oval, oncosphere is covered with a thin outer membrane and inner thick membrane with 2 polar thickenings that bear several polar filaments, with yolk material between the two membranes. these eggs measuring 30-47 μ M in diameter.
- Larval stage (cysticercoid): the scolex is surrounded by bladder like cyst, that contain little or no fluid and a tail.

Morphology.



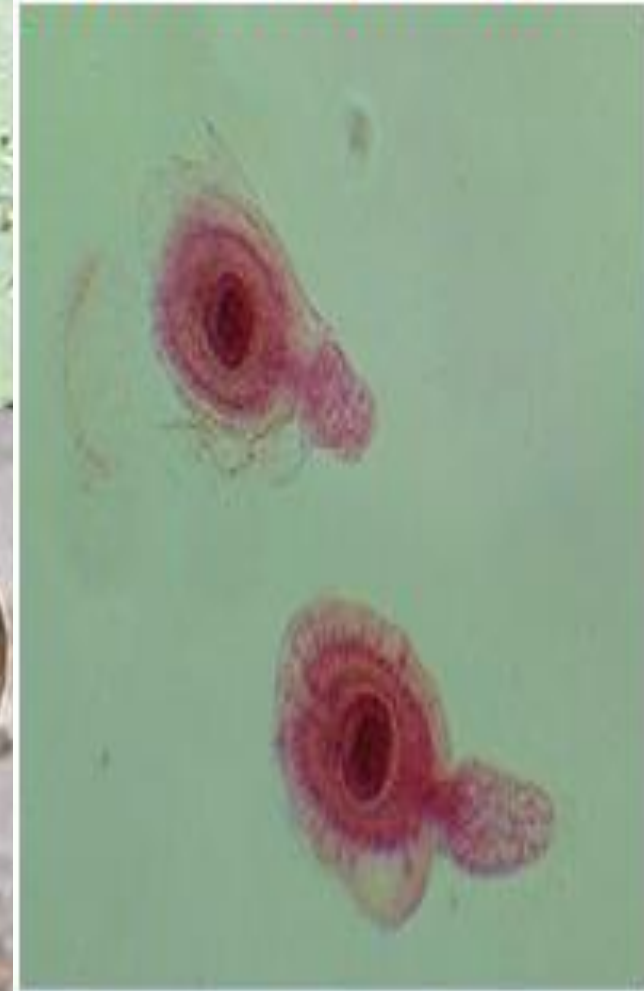
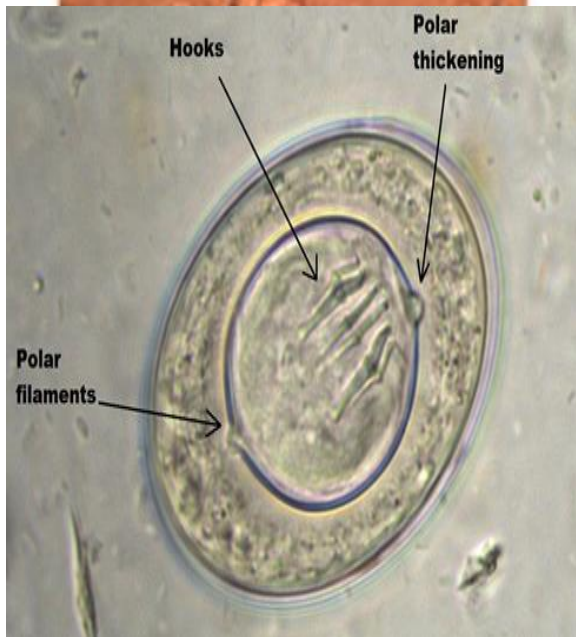
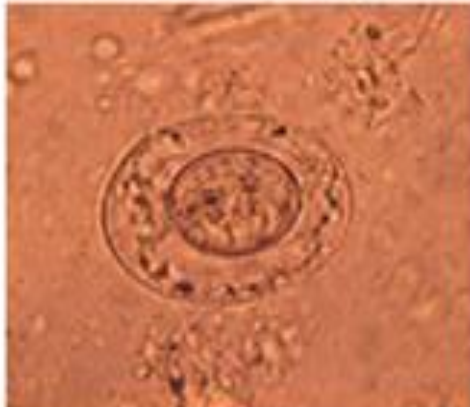
Three adult specimens of
H. nana.



Two of the suckers and the
rostellar
hooks are clearly visible.

Egg

Cysticercoid of *Hymenolepis* spp.



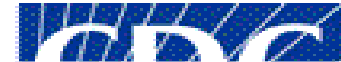
Life Cycle

Eggs of *Hymenolepis nana* are immediately infective when passed with the stool and cannot survive more than 10 days in the external environment. When eggs are ingested by an arthropod intermediate host (various species of beetles and fleas may serve as intermediate hosts), they develop into cysticercoids, which can infect humans or rodents upon ingestion and develop into adults in the small intestine.) But in contaminated food or water or from hands contaminated with feces), the oncospheres contained in the eggs are released. The oncospheres (hexacanth larvae) penetrate the intestinal villus and develop into cysticercoid larvae. Upon rupture of the villus, the cysticercoids return to the intestinal lumen, evaginate their scoleces, attach to the intestinal mucosa and develop into adults that reside in the small intestine producing gravid proglottids. Eggs are passed in the stool when released from proglottids. An alternate mode of infection consists of internal autoinfection, where the eggs release their hexacanth embryo. The life span of adult worms is 4 to 6 weeks, but internal autoinfection allows the infection to persist for years.

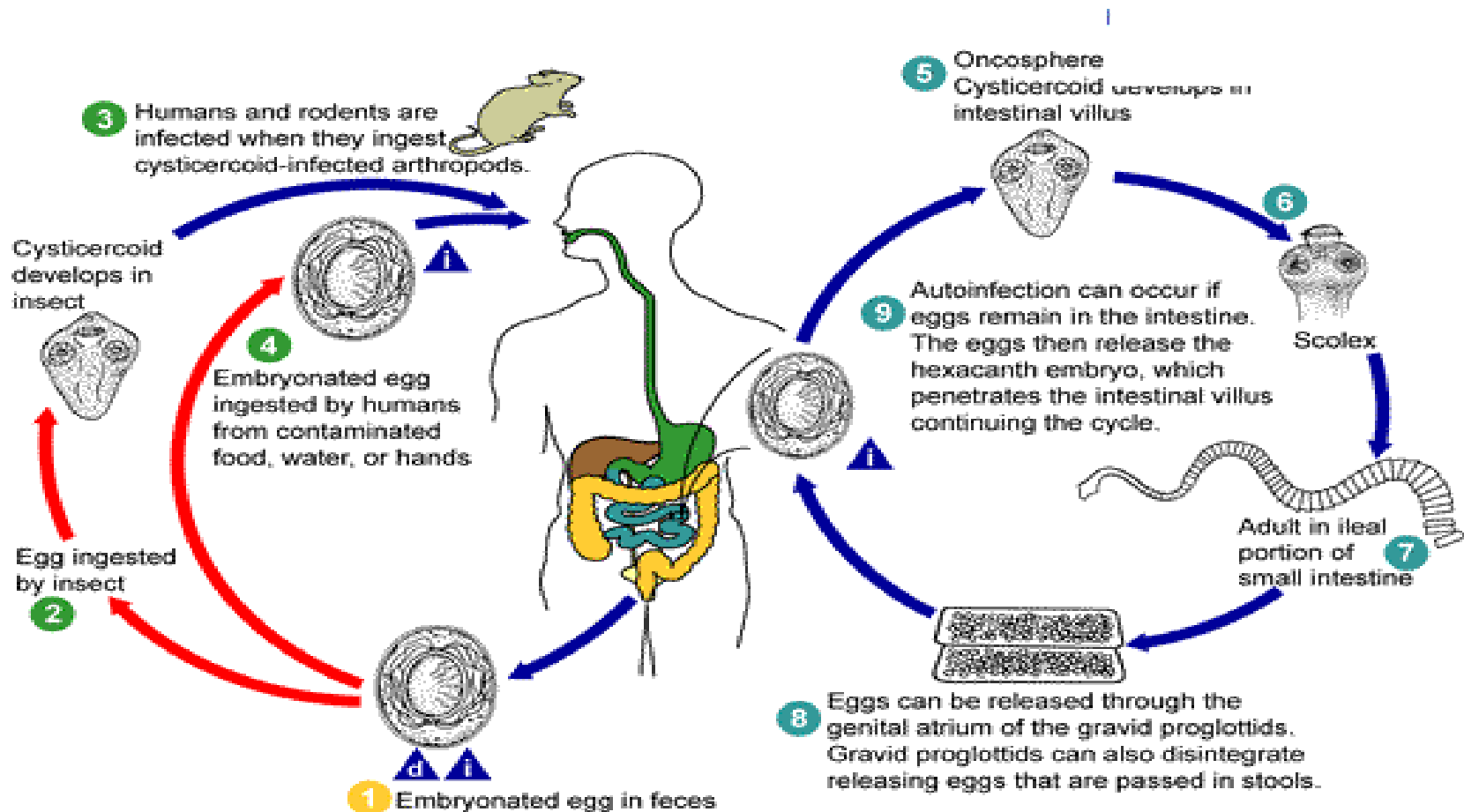
Lab Diagnosis

Demonstration of characteristic ova in the stool Proglottids are not recovered because they undergo degeneration prior to passage.

Hymenolepis nana



i = Infective Stage
d = Diagnostic Stage



– *Hymenolepis diminuta* (rat tapeworm)

- Adult are larger *H. nana* that measure 20-50 cm in length.
- Scolex club shape with 4 suckers and retractable unarmed rostellum.
- The immature, mature and gravid segments are similar to *H. nana*.
- Eggs larger than *nana*, ovoid, have a thick outer shell, inner contains 2 polar thickenings with no polar filaments.

Life cycle: definitive hosts: rats, rarely human.

Intermediate hosts: Insects (fleas and beetles).

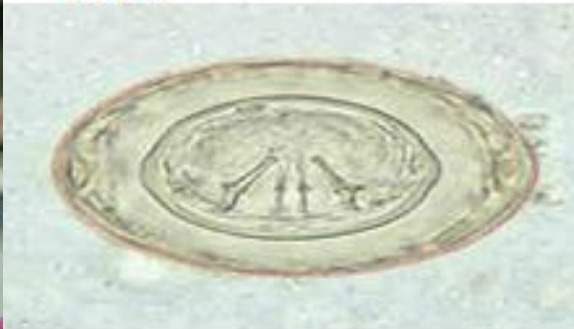
Eggs are not infective to man must be ingested by insect and develop to cysticercoid, man gets infection when infected insect is accidentally swallowed and digested then larva attaches to intestine of human and develops into a tapeworm.

Lab. Diagnosis Like *H. nana*

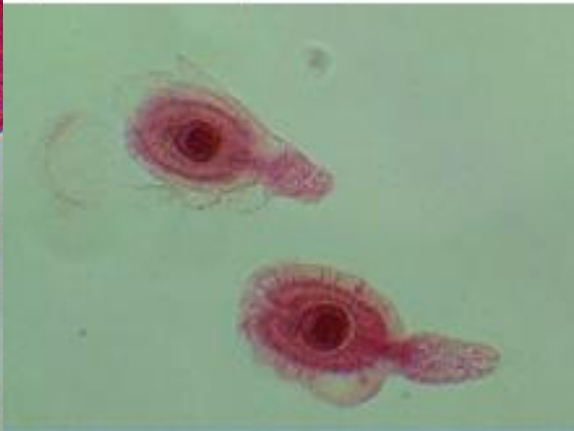
Hymenolepis diminuta



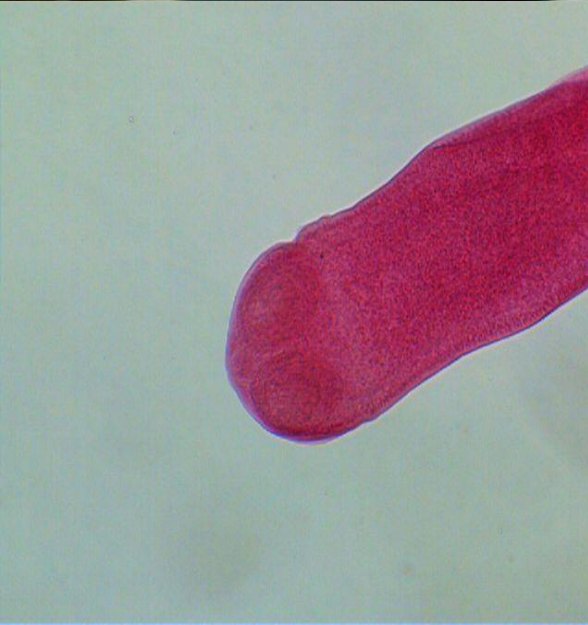
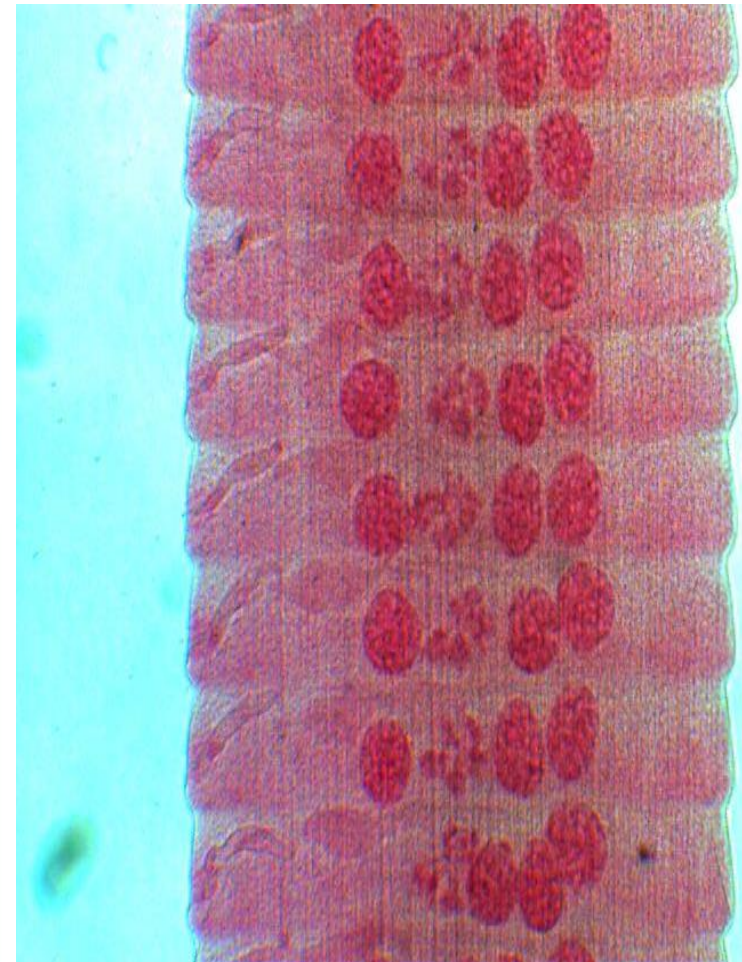
- Ova



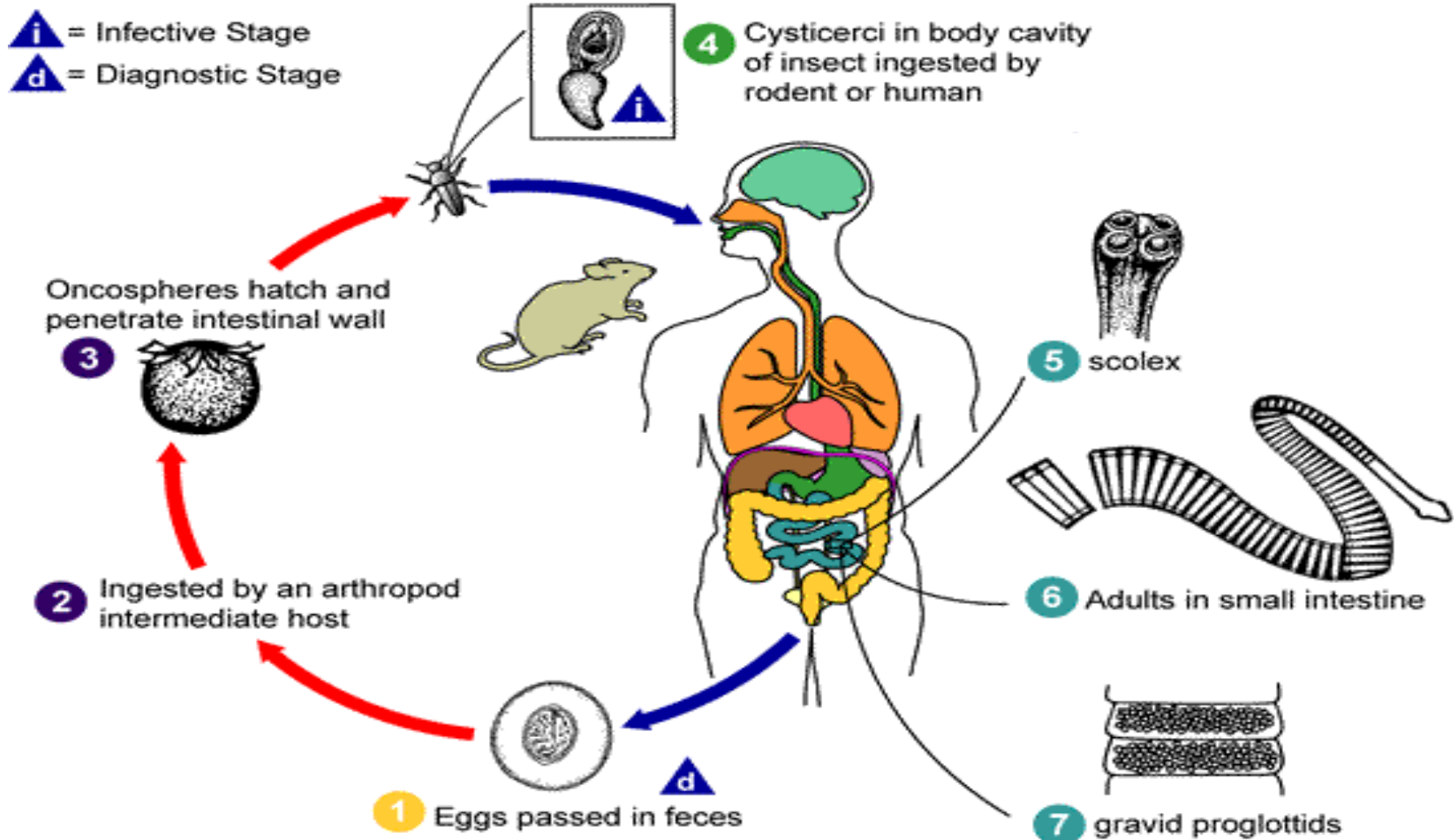
cysticercoid of *Hymenolepis diminuta* •



Proglottid



Hymenolepis diminuta



Dipylidium caninum

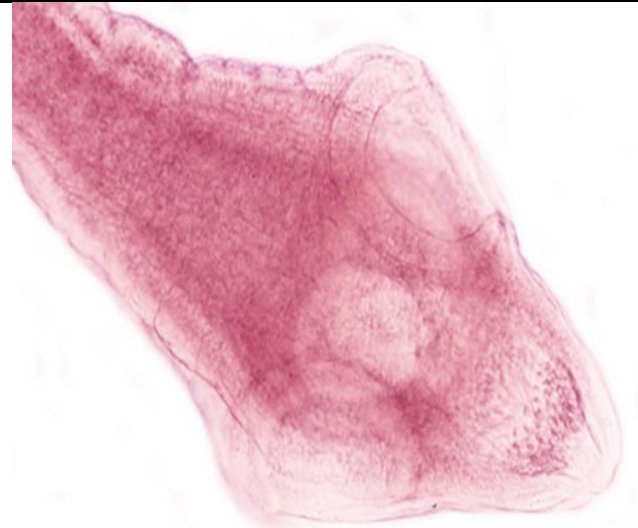
(dog tapeworm, double pored tape worm)

Adult worm measure (average 15 cm long). The single proglottids have been described as looking like cucumber seeds when moist and like rice grains when dry.

Adult tapeworm of *D. caninum*.



The scolex is conical-shaped and has four suckers. There is also a retractable rostellum armed with several rings of small hooks



mature Proglottids are longer than they wide and contain two sets each of male and female reproductive organs, Bilateral genital pores.

Gravid Proglottids may be passed singly or in chains, and occasionally may be seen dangling from the anus. They are barrel-shaped when passed and often resemble rice grains when dried.



mature *D. caninum* proglottid. The genital pores are clearly visible in the carmine-stained proglottid.



Gravid *D. caninum* proglottid.

Egg: Are round to oval, Each egg measures from 25 to 40 μm and contains the six-hooked oncosphere. The individual eggs may closely resemble those of *Taenia spp.*, particularly if they are released from the egg packet. Proglottids of *D. caninum* contain characteristic egg packets that are round to ovoid and contain 5 to 30 eggs.



D. caninum egg packet, containing visible eggs, in a wet mount

Life cycle:

- Common parasite of domestic dogs and cats often occurs in children, intermediate host are the fleas of the dog and cat.
- Larval stage is cysticercoid develops in the intermediate host.
- Man infected accidentally by ingesting the fleas which contain larva then develops to adult worm.

Lab. Diagnosis

Demonstration - egg capsules in stool by direct or concentration methods

- gravid proglottid for the structure.

