B. Family DIPYLIDIIDAE

1. *Dipylidium caninum*
   a. This is the most common dog and cat tapeworm, and has a worldwide distribution.
   b. Adults can reach 30 - 50 cm; oval or cucumber seed-shaped proglottids. Each proglottid has bilateral genital pores. Adults within the definitive host are of little pathological concern.
   c. Egg packets are released with the terminal gravid segment. Insect larvae (*Ctenocephalides canis, C. felis, Pulex irritans*), and lice (*Trichodectes canis*) feed on debris/eggs and the parasite develops into a cysticercoid within the insect. The flea is inadvertently ingested by the definitive host during grooming; children may be accidentally infected in similar fashion.
   d. The prepatent period is 2-3 weeks.
   e. Treatment for the tapeworm should include a flea eradication program (adulticide, insect growth regulator, vacuuming often, etc.).
   f. Emerging issue: Some cases of possible dewormer resistance.

C. Family ANOPLOCEPHALIDAE:

1. In General
   a. Adult tapeworms of large animals (equine & ruminant)
   b. Free-living oribatid mites are the intermediate hosts contain cysticercoid infective larval stage.
   c. Eggs have granular shells with irregular or angular shapes.

2. Tapeworms of horses.
   a. *Anoplocephala perfoliata*
      • found in the large and small intestine (especially the ileoceleal junction)
      • Inflammation & intestinal intussusception due to obstruction of ileoceleal junction.
      • Treatment with mebendazole or pyrantel (at 2x normal dose) is indicated even if eggs are not detected.

3. Tapeworms of ruminants.
      • Very common.
      • Little, if any, clinical significance.
      • Segments & eggs often seen in feces.

D. Family MESOCESTOIDIDAE

1. *Mesocestoides corti*
   a. Rare infections in dogs & cats in North Carolina.
   b. Requires 2 intermediate hosts
      • 1st intermediate host is a dung beetle [cysticercoid]
      • 2nd intermediate host can be a mammal, bird or reptile. [tetrahyridium]
      • Dogs or cats can also act as 2nd intermediate hosts
   c. Dogs and cats are typically infected by predation of snakes, birds, and small mammals.
   d. Prepatent period is ~ 2 weeks. Small, sesame seed-sized proglottids are seen in the feces.
   e. Adult worms in the intestine. (=> dog, cat as definitive host)
      • Can multiply by asexual fission, therefore, anthelmintics used must be 100% effective to eradicate the infection.
      • Can cause diarrhea
   f. Larval worms (tetrahyridium) in the peritoneal cavity. (=> dog, cat as 2nd intermediate host)
      • Can multiply by asexual fission, therefore, anthelmintics used must be 100% effective to eradicate the infection.
      • Can cause ascites.
IV. **PSEUDOPHYLLIDEAN** tapeworms

*Spirometra sp.*

A. Morphology:
- Scolex has 2 long shallow grooves called bothrium (bothria, plural) that help in attachment.
- Adults can be 2 to 12 m long.
- Genital organs and genital pores are centrally placed on the ventral surface of each proglottid.
- The egg is operculated, oval and brown, and easily confused with the eggs of trematodes!
- Unlike the taeniids

B. Life-cycle

1. Requires 2 intermediate hosts - the first host is a copepod, and the second host is a vertebrate.
   a. Eggs are released through a uterine pore (not with in segments)
   b. Eggs hatch in water to release a free-living coracidium.
   c. A copepod ingests the coracidium, which becomes a procercoid larva.
   d. A The second intermediate host (amphibian or reptile) ingests the copepod & a plerocercoid larva develops.
   e. A paratenic host (reptile, mammal [raccoon, rodent or pig]) may become infected with the plerocercoid by ingesting the 2nd intermediate host.
   d. The definitive host (bobcat, dog, cat, raccoon.) is infected by ingestion of the second intermediate host, or a paratenic host.
   e. Infection is becoming more common in the southern U.S., including North Carolina.

C. Diagnosis is by observing eggs in a fecal sedimentation. Although the tapeworms usually release so many eggs that the ova can be detected on a direct smear. Do **not** confuse the ova of this tapeworm with that of the lung fluke, *Paragonimus*.

D. Human ingestion of a procercoid or plerocercoid can lead to the zoonotic disease, sparganosis.

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