

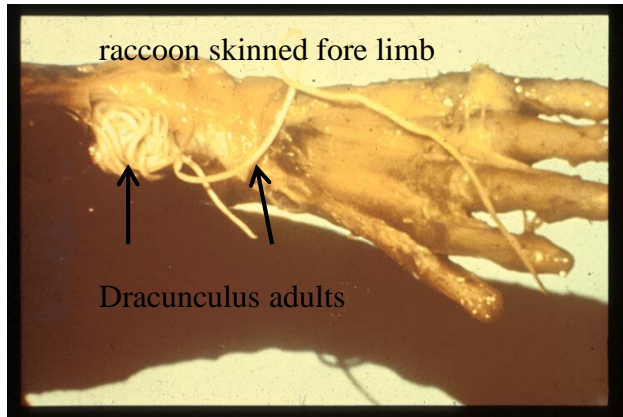
Order Spirurida - general features

- Who is in this Order?
 - Dracunculus insignis* – subcutaneous.
 - Physaloptera* - stomach worm of dogs, cats.
 - Habronema* & *Drashia* - found in stomach of horses.
 - Onchocerca* - found in ligaments of horses.
 - Dipetalonema* - subcutaneous in dogs.
 - Dirofilaria* - dog heartworm.

Order Spirurida - general features

- **Require** arthropods as intermediate host.
- Routes of infection:
 1. ingestion of arthropod, or ingestion of a paratenic host that ate the infected arthropod.
 2. infective larvae delivered to host when arthropod feeds on the host.

Order Spirurida



- *Dracunculus insignis* – occurs in North Carolina in dogs, raccoon reservoir (also, reported in 2 cats)

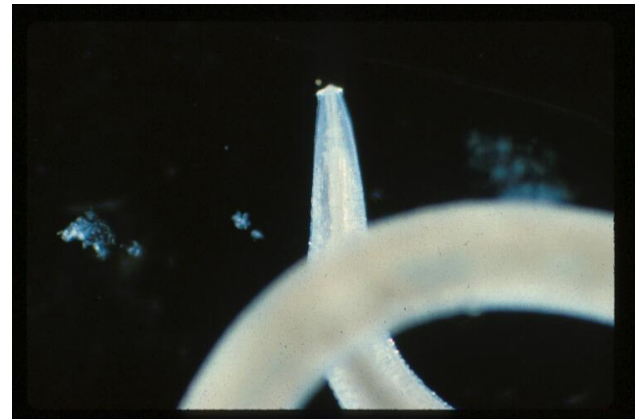
Spirurida



- *Dracunculus insignis* life cycle: adult female opens skin lesion to release L₁ that are eaten by copepod intermediate host. Copepod or paratenic host frog eaten by raccoon/dog. Prepatent time in dog = 300-400 days.

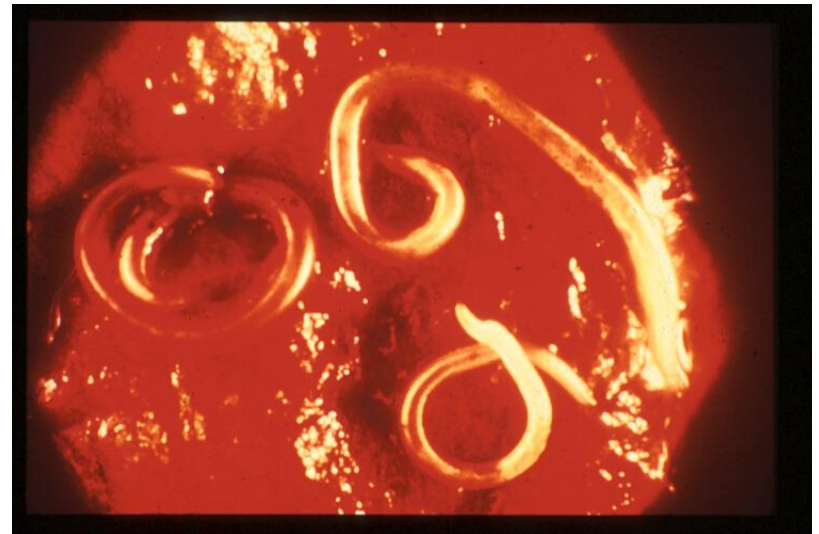
Physaloptera sp.

- Thick-bodied up to 40 mm long with anterior collar, don't confuse with *Toxocara* or *Toxascaris*. Adults in stomach of raccoons (reservoir host), dogs and cats.



Physaloptera sp.

- Beetles are the intermediate hosts, but rodents can be paratenic hosts.
- Pathogenesis: gastritis, bleeding, ulcers.



Physaloptera sp.

- Diagnosis: difficult due to few and hard to float eggs. Vomited worm - don't assume it is *Toxocara*. Endoscopic exam.
- Treatment: Pyrantel at 20mg/kg, repeated if vomiting persists. Other anthelmintics effective as well.

Habronema and *Drashia*

- Up to 20 mm long, thicker than *Trichostrongylus axei*, found in the stomach of horses.

Habronema and *Drashia*

- larvated egg, passed in feces, hatches and L₁ ingested by maggot of fly, L₃ deposited on horse by fly when feeding around lips, eye or wounds.



Habronema and *Drashia*

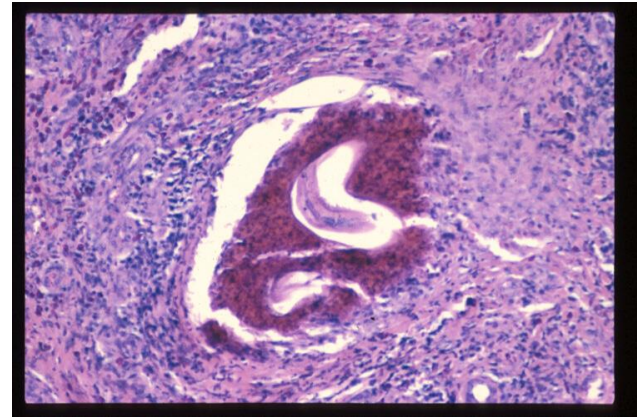
- Pathogenesis:
 1. Internal - gastritis and ulcers from *Habronema* adults, fibrous “tumors” in stomach wall containing adult *Drashia*.



Habronema and *Drashia*

- 2. External - cutaneous habronemiasis occurs when larval stages remain in skin and cause eosinophil/granulomatous lesion.

Habronema and *Drashia*



Habronema and *Drashia*

- Diagnosis: anorexia and/cutaneous lesions, response to anthelmintics.
- Treatment and control:
 1. systemic fenbendazole or ivermectin, also topical application.
 2. compost manure and fly control if indoors. Repellant on abrasions.

Dipetalonema (*Acanthocheilonema*)

- Adults in subcutaneous tissue cause no signs, but microfilariae in blood can be confused with *Dirofilaria immitis*.

Onchocerca sp.

- Species in horses very common before ivermectin, now see in horses under minimal management.
- Adult worm in ligaments of neck cause no pathology there.
- Microfilariae produced by adults congregate in skin of ventral abdomen where *Culicoides* (midge) bite.

Onchocerca sp.

- Pathogenesis: summer sores develop on ventral abdomen, microfilariae found in skin snip.
- Treatment: systemic ivermectin clears skin lesions. May precipitate transient edema.

Dirofilaria immitis

- Read American Heartworm Society Guidelines for Dogs.
- Read American Heartworm Society Guidelines for Cats.
- Come ready to discuss in class Monday, October 26th.
- These Guidelines are published “Best Practice Guidelines” viewed by your clients
- <http://heartwormsociety.org>