**Giardia sp. - cysts**

Cysts measure about 10 to 12 µm in length and contain two to four nuclei, axonemes and median bodies.

**Giardia sp. - trophozoites**

This trophozoite was found in watery feces of an infected dog. Normally, only cysts are found in the feces. Note the shape (pear-shaped) and the size (10 to 18 µm in length). The internal organelles include 2 nuclei, a median body, and an axoneme. Also note the free flagellum and sucking disk.

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**Trichomonas foetus - trophozoites**

Note the undulating membrane and free flagella. This parasite is usually diagnosed in a direct smear or culture. This parasite infects the reproductive tract of cattle and the intestine of cats.

**Diagnosis of Trichomonas foetus in cats**

T. foetus may be suspected in cats which have chronic diarrhea. The diagnosis of this infection should proceed as follows:

1. **Direct smear of fresh diarrheal sample can be added to dilute the sample.** If trophozoites are seen, you have made the diagnosis. If not, then proceed to step 2.
2. **Place a loop of fecal material recovered from the cat’s rectum into the HT broth culture system, remove all air (the parasite is an anaerobe), culture at room temperature for up to 12 days.** If parasites are seen growing, you have made the diagnosis. If not, go to step 3.
3. **Send a small sample of feces recovered from the rectum of the cat to a lab that will run a PCR test for Trichomonas.** If positive you have made your diagnosis. If not, then consider other possibilities.

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**Babesia canis**

The trophozoites are pyriform and 4 to 5 µm long, or ameboid 2 to 4 µm in diameter. They generally contain a vacuole and multiple infection of the erythrocytes is common.

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**Leucocytozoon smithi - gametocyte**

This slide shows a typical gametocyte which has distorted the white blood cell into an elongate, elliptical body. Little evidence of the white blood cell morphology remains. Note that no schizonts appear in the blood.
**Life cycle of Leucocytozoon simondi**

Black fly

Duck

**Haemoproteus sp.**

This is a parasite of reptiles, birds, and biting flies (the definitive hosts). In the intermediate host the schizonts are found in the vascular endothelial cells and the gametocytes are found within the red blood cells (arrows).

Haemoproteus spp. are essentially non-pathogenic.

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**Life Cycle of Haemoproteus columbae**

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**Cryptosporidium parvum**

This is a fecal smear stained by the acid-fast technique. The oocysts are acid-fast and therefore stain red. Yeasts (which are about the same size as the oocysts, 5 μm) stain a light blue or green (depending on the counter-stain used).

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**Toxoplasma gondii**

Sporulated oocyst. These oocysts will sporulate within 48 hrs after being passed from the rat. Note the small size (9 to 14 μm) and the round shape.

These oocysts are identical to those of Neospora caninum (which would be found being passed only in the dog’s feces).

The oocysts of *Homomonadoides* spp. (species of which can be found in both the dog and the cat) also are identical to *Neospora* and *Toxoplasma*. However, *Homomonadoides* spp. are non-pathogenic in the dog and cat.

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**Toxoplasma gondii**

Note that this cyst contains many bradyzoites.
**Toxoplasma gondii**
Schizonts in the intestinal cells of a cat. Note the tachyzoites radiating from the center of the schizont.

**Neospora caninum**
The tissue cysts of this parasite can be found in many different tissues. This photo is of a tissue cyst in the skin of a dog.

**Cystoisospora (Isospora) felis oocysts from cat feces. They measure about 40μm.**
Identical oocysts seen in the dog are those of *C. canis*.

**Cystoisospora (Isospora) rivolta oocysts from cat feces. They measure about 20μm.**
Oocysts of *C. alveocystis* in the dog are identical to those of *C. rivolta* of the cat.

**Eimeria spp.**
Unsporulated oocyst from the feces of a goat. Note the thinning of the wall at one pole of the oocyst (the micropyre). Parasites of this genus are also found in many herbivores, reptiles and birds.

**Eimeria sp.**
This is a cross section of the intestine of a goat infected with *Eimeria sp*. This section shows gametes and schizonts in the epithelial cells.
**Eimeria spp.**

This booklet shows the location of the intestinal lesions due to the various species of *Eimeria* found in chickens.

Diagnosis to species is usually made at necropsy by finding where the lesions are located in the intestine.

(know this is how a species diagnosis is made in chickens)

**Sarcocystis sp.**

This is a sporocyst recovered from the feces of a dog.

**Sarcocystis sp.**

A mature cyst in the muscle of the intermediate host.

Note the large size of this cyst.

**Balantidium coli**

This large ciliate is a normal inhabitant of the colon of pigs, rats and guinea pigs. In primates it may cause ulceration of the mucous of the colon.

The eye shown here is the diagnostic stage that can be found on flotation of feces. It measures about 50 um.
**Leishmania donovani**

Amastigotes in a spleen impression smear (‘touch-prep’).

*Drawing of an amastigote.*

**Trypanosoma brucei**

Pathogenic trypanosome of domestic animals in tropical Africa. Note the nucleus, kinetoplast, undulating membrane and the free flagellum.

*Image of a Trypanosoma brucei.*

**Leishmania donovani**

Tissue smear of the spleen of an infected mouse. The red arrows point to some of the amastigotes which have broken out of the phagocytic macrophages when the smear was made. Note the kinetoplast and nucleus within each amastigote. The green arrows point to the remains of the membrane of the host macrophage.