Phylum: Protozoa

1. The phylum Protozoa contains unicellular organisms which belong to the Animal Kingdom.

2. They do not possess a rigid cellulose wall exterior to the cell membrane (pellicle).

3. Protozoa are eukaryotic in that their genetic information is stored in chromosomes contained in a nuclear envelope.

4. Protozoa, like other eukaryotic cells, have a nucleus, an endoplasmic reticulum, mitochondria and a Golgi body and lysosomes.

Locomotion in protozoa:

1. Locomoter by a single flagellum such as the genus *Trypanosoma*, and in some other protozoa by several flagella. A flagellum is a contractile fiber, arising from a structure called a basal body, during movement the shape of these organism is maintained by microtubules in pellicle.

2. Locomotors by cilia, such as *Balantidium*, cilia which are fine, short hairs, each arising from basal body, these cover the body surface.

3. Locomotors by pseudopodia used by protozoa such as *Entamoeba*. Pseudopodia are prolongations of cytoplasm. Movement occurs as the rest of the cytoplasm flow into this prolongation. The pseudopodia also possesses a phagocytic capacity.

4. Gliding movements, such as *Eimeria*.

Nutrition of parasitic protozoa:

- Pinocytosis: tiny droplets of fluid
- Phagocytosis: small objects of macro-molecular dimension are taken into the cell.
both cases, the process is the same, the cell membrane gradually enveloping the droplet or object which has become adherent to its outer surface. When this is complete, the particle is carried into the cell where fusion with lysosomes effects digestion. Finally, undigested material is extruded from the cell.

**Reproduction in protozoa:**

**A- Asexual reproduction**

1. **Binary fission:** In most protozoa reproduction is asexual and is accomplished by binary fission in the case of *Babesia* within erythrocytes.

2. **Schizogony:** Another form of asexual reproduction which occurs in the subphylum *Sporozoa*. In the latter process, the trophozoite grows to a large size while the nucleus divides repeatedly. This structure is called a schizont and when mature, each nucleus has acquired a portion of the cytoplasm so that the schizont is filled with a large number of elongated separate organisms called merozoites. The schizont eventually ruptures, liberating the individual merozoites.

**B- Sexual reproduction:** Most *Sporozoa* at certain stages in their life cycle also have a sexual phase of reproduction, called gametogony or sporogony. Sometimes, as in *Eimeria*, both asexual and sexual phases occur in the same host while in others such as *Plasmodium* the asexual phase occurs in the vertebrate host and the sexual phase in the arthropod vector.

**Classification of protozoa:**

There are four subphyla of protozoa of veterinary importance. these and the most important genera they contain are listed in table.
Phylum: Protozoa
(unicellular, eukaryotic animals)

Subphylum

- Sarcomastigophora
  - locomotion by pseudopodia or flagella
- Sporozoa
  - locomotion by gliding, life cycle intracellular both sexual and asexual phases occur
- Ciliophora
  - locomotion by cilia
- Microspora
  - (little veterinary significance)

Class

- Sarcodina
  - (amoeboid movement by pseudopodia)
    - Entamoeba
- Mastigophora
  - (one or more flagella)
    - Trypanosoma
    - Leishmania
    - Trichomonas
    - Histomonas
    - Hexamita
    - Giardia
- Coccidia
  - (parasite of epithelial cells in which both asexual and sexual reproduction place)
    - Eimeria
    - Isospora
    - Cryptosporidium
    - Toxoplasma
    - Sarcocystis
    - Besnoitia
    - Hammondia
    - Hepatozoon
    - Neospora
- Piroplasmidia
  - (parasite of blood cells, have ticks as vectors in which sexual reproduction occurs)
    - Babesia
    - Theileria
    - Cytauxzoon
- Haemosporidia
  - (parasite of blood cells, have blood sucking dipterans as vectors in which reproduction occurs)
    - Plasmodium
    - Haemoproteus
    - Leucocytozoon
Subphylum: Sarcomastigophora
Class: Sarcodina

*Entamoeba histolytica*

This pathogen is the cause of amoebic dysentery in man, a disease of worldwide distribution.

Trophozoites secrete proteolytic enzymes and produce characteristic flask-shaped ulcers in the mucosa of the large intestine. Their erosion may allow the parasites to enter the bloodstream when the most common sequel is the formation of amoebic abscesses in the liver.

*Entamoeba* multiplies by binary fission, but eventually encysts and is passed in the faeces.

The cyst containing four nuclei, is relatively resistant and is the infective stage for the next host.

Diagnosis: fecal smears, particularly if diarrhoeic

Dogs are not a significant reservoir of infection for man so that prophylaxis ultimately depends on personal and sanitary hygiene in the human population.

Treatment, if required, relies on the combined use of metronidazole and diiodohydroxyquin