

## Lab (4)

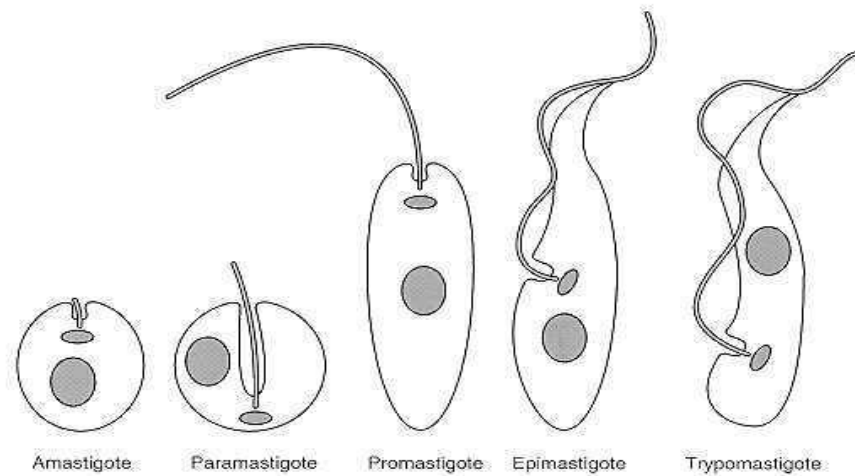
**Blood and Tissue flagellates:** it include flagellated protozoa that contain

1-flagella            2-nuclues            3-kinetoplast

### Morphology of tissue and blood flagelates

1-Amastigote            2-Promastigote            3-Epimastigote

4-Trypomastigote



Kingdom: Protista

Subkingdom: Protozoa

Phylum: Sarcomastigophora

Class: Zoomastigophora

Order: Kinetoplastida

Family: Trypanosomatidae

Genus: 1-*Leishmania* spp.

2-*Trypanosoma* spp.

## ***Leishmania spp.***

1-*Leishmania tropica*

2-*Leishmania donovani*

3-*Leishmania braziliensis*

### **Disease name:**

- *Leishmania tropica* causes Baghdad boil ( cutaneous leishmaniasis).

-*Leishmania donovani* causes kala-azar or black fever (visceral leishmaniasis).

-*Leishmania braziliensis* causes subcutaneous (mucocutaneous leishmaniasis).

### **Site of infection:**

-*Leishmania tropica* ( skin )

-*Leishmania donovani* ( liver, spleen, lymph node, bone marrow )

-*Leishmania braziliensis* ( mucocutaneous tissue of skin, nose, mouth )

**Definitive host** : human

**Intermediate host (vector)** : *Phlebotomus* female ( sand fly)

### **Morphology:**

*Leishmania* exist as flagellated extracellular Promastigotes in the sandfly vector and as a flagellar obligate intracellular Amastigotes within mononuclear phagocytes of their vertebrate hosts. The various species are not distinguishable morphologically from one another. When stained with Giemsa stain, amastigotes appear as round or oval bodies ranging from 2-3 micrometer in diameter with a well defined nucleus and kinetoplast, a rod shaped specialized mitochondrial structure. The flagellated Promastigote form is spindle shaped, measuring (10-20) micrometer in length, not including the length of the flagellum. As in the Amastigote form a nucleus and kinetoplast are clearly visible.

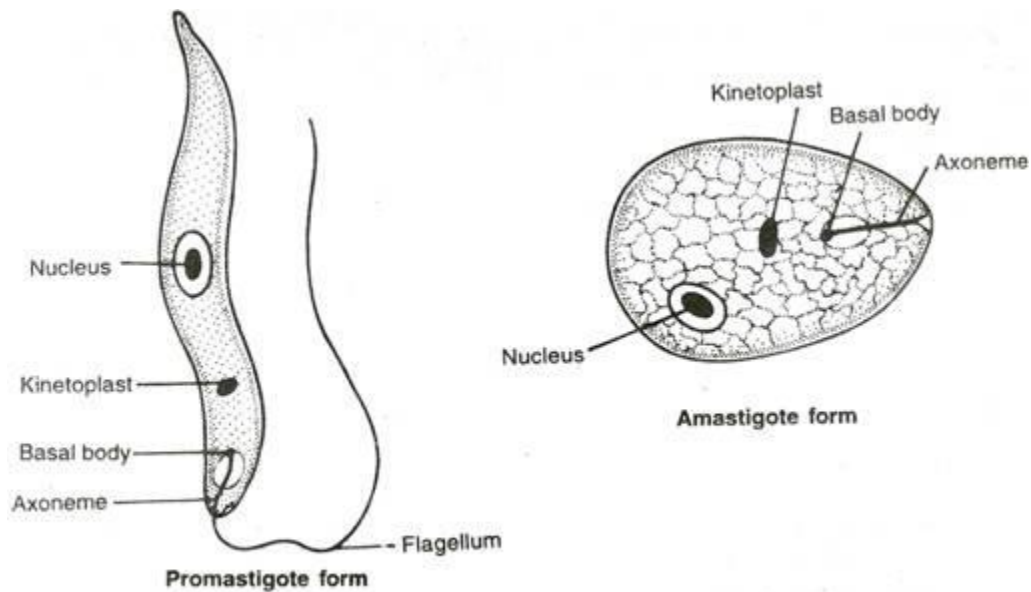
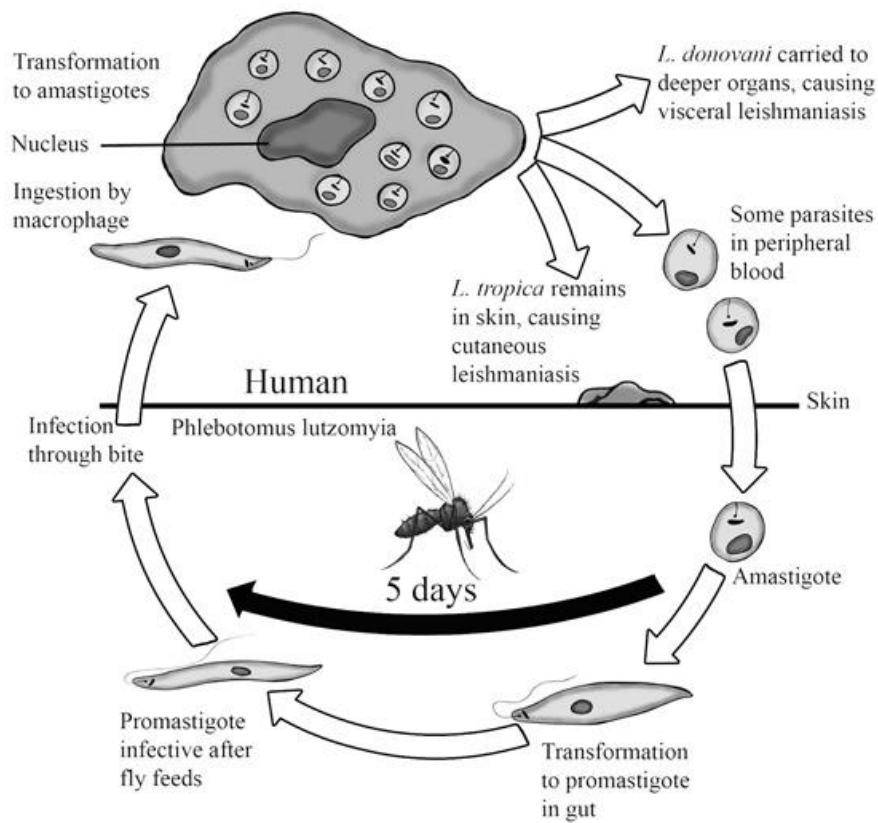


Fig. 178. Morphological forms of *Leishmania donovani*

### Life cycle:

All forms of infection starts when a female sand fly (*Phlebotomus sp.*) takes a blood meal from an infected host . Small amounts of blood, lymph and macrophages infected with *Leishmania* amastigotes are ingested. Once ingested the amastigotes transform to promastigotes in the sandfly, the non-infective promastigotes divide and develop into infective metacyclic promastigotes. These are formed in the midgut of the sandfly and migrate to the proboscis. When the sandfly bites, the extracellular promastigotes at the site of the bite are Phagocytosed by macrophages. After phagocytosis, transformation to dividing amastigotes occurs within 24 hours. Reproduction at all stages of the lifecycle is believed to occur by binary fission. No sexual stage has been identified.



## Diagnosis:

- 1-Direct smear of blood and lymph.
- 2-Serology.
- 3-Cuturing in N.N.N.(Nove MacNeal-Nicole).
- 4-Biopsy from liver,Spleen and bone marrow.