

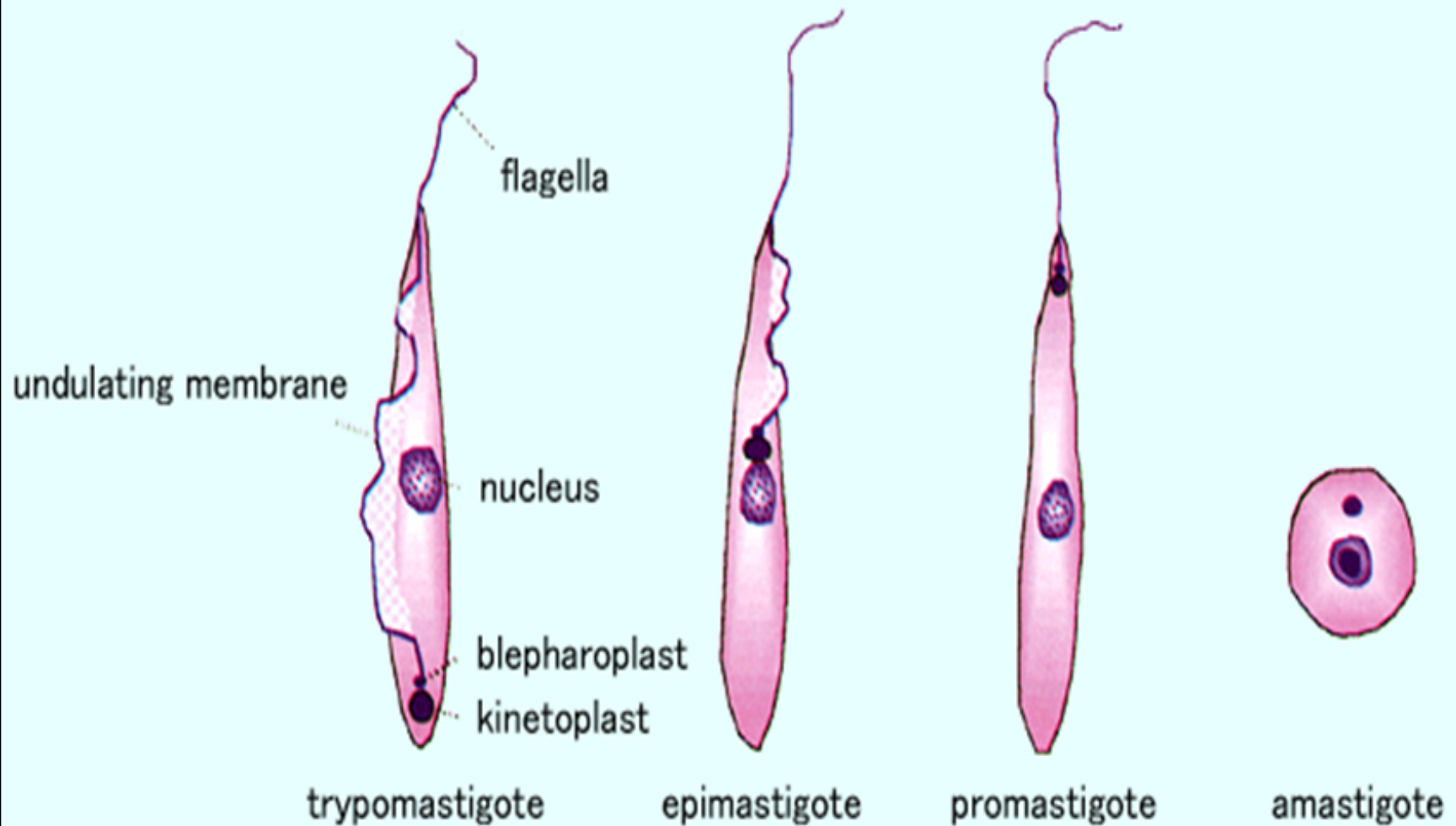


# Haemoflagellates

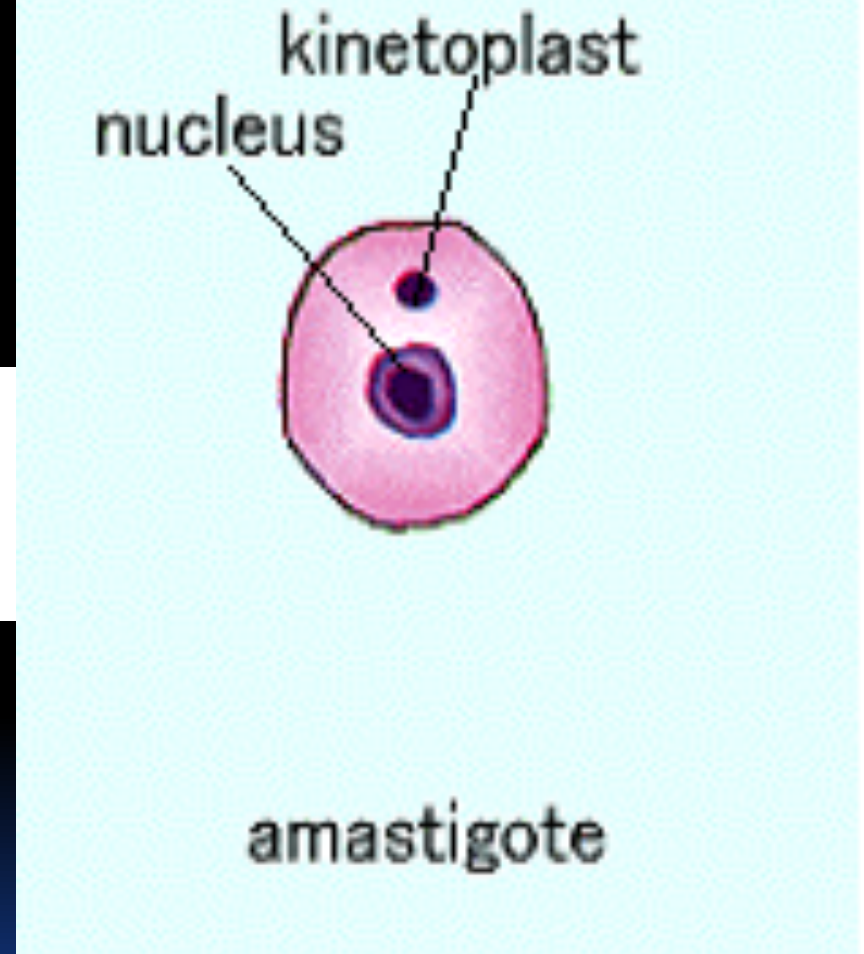
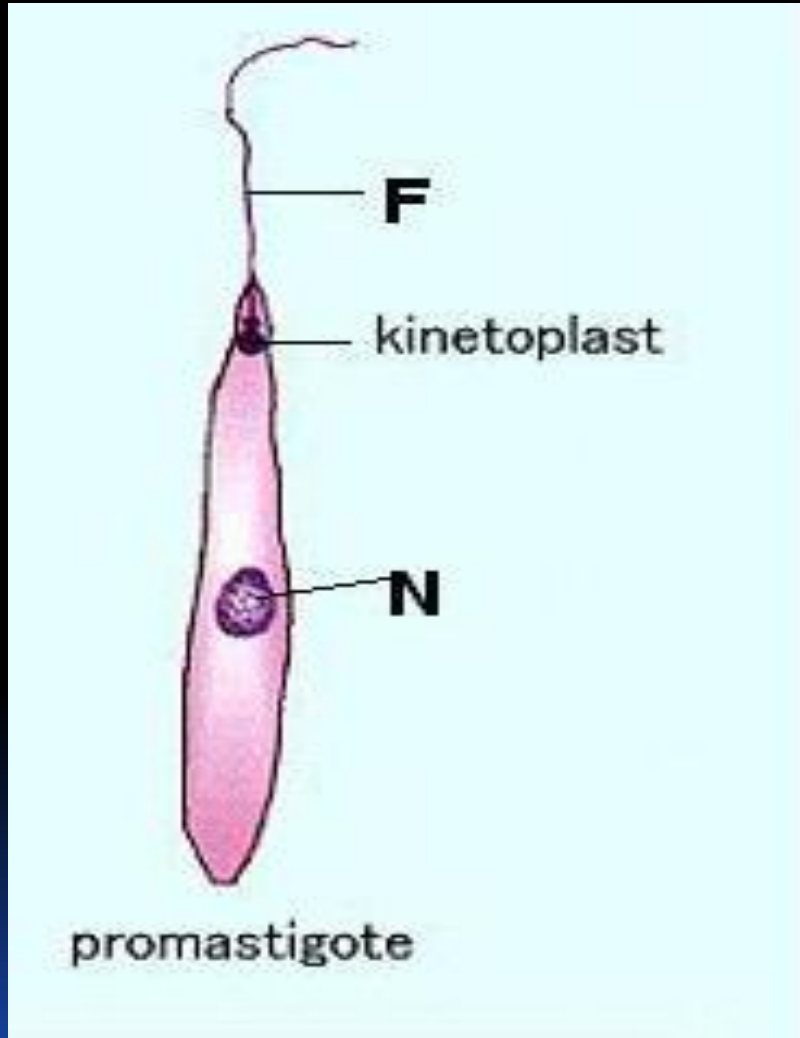
Leishmania

**Dr MONA BADR**

# Different stages of Haemoflagellates

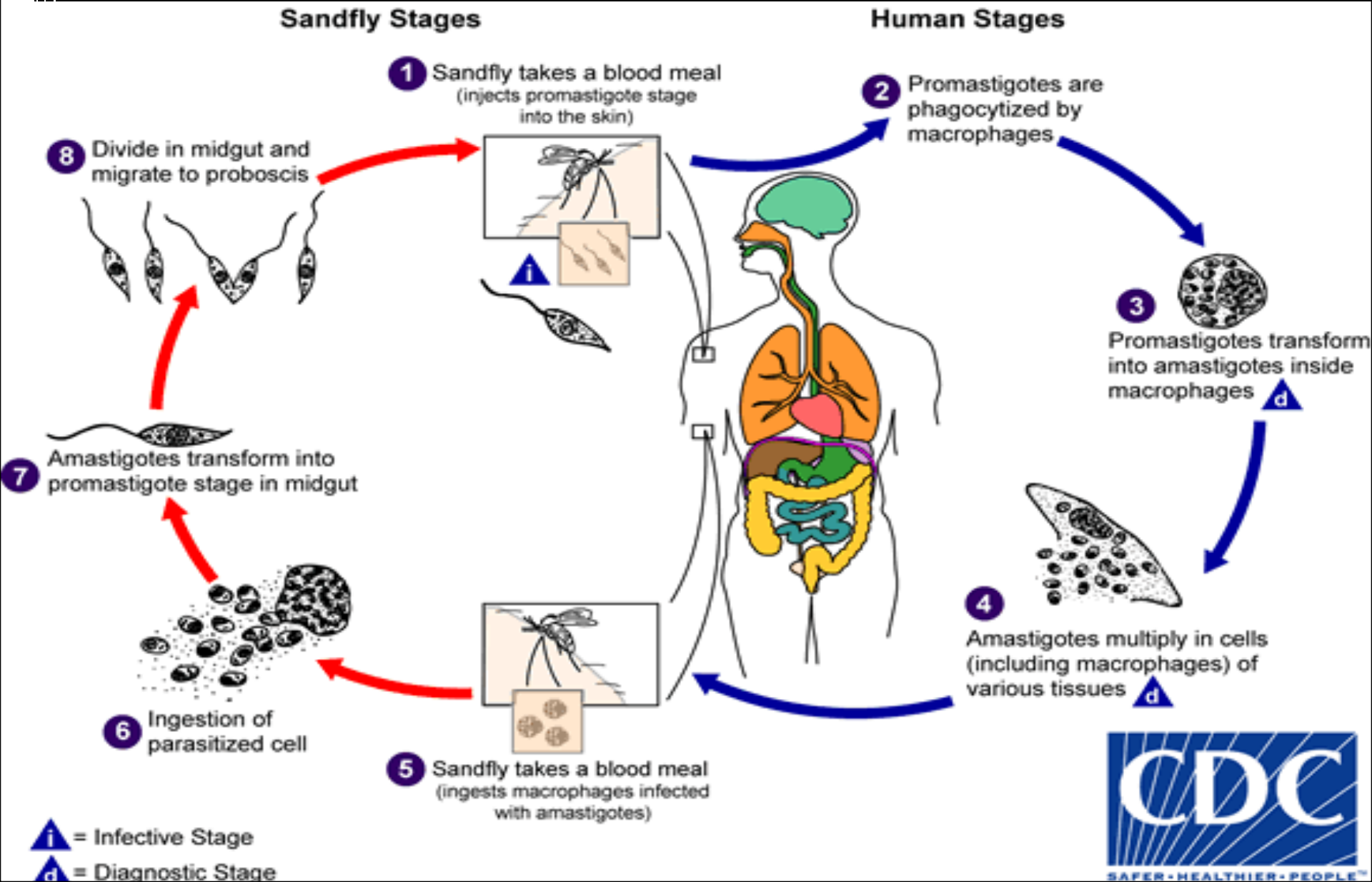


# Promastigotes of Leishmania



Amastigote of Leishmania

# The life cycle of *Leishmania*



## *Leishmania* Parasites and Diseases

<b>SPECIES</b>	<b>Disease</b>
<i>Leishmania tropica</i> * <i>Leishmania major</i> * <i>Leishmania aethiopica</i> <i>Leishmania mexicana</i>	Cutaneous leishmaniasis
<i>Leishmania braziliensis</i>	Mucocutaneous leishmaniasis
<i>Leishmania donovani</i> * <i>Leishmania infantum</i> * <i>Leishmania chagasi</i>	Visceral leishmaniasis

\* Endemic in Saudi Arabia

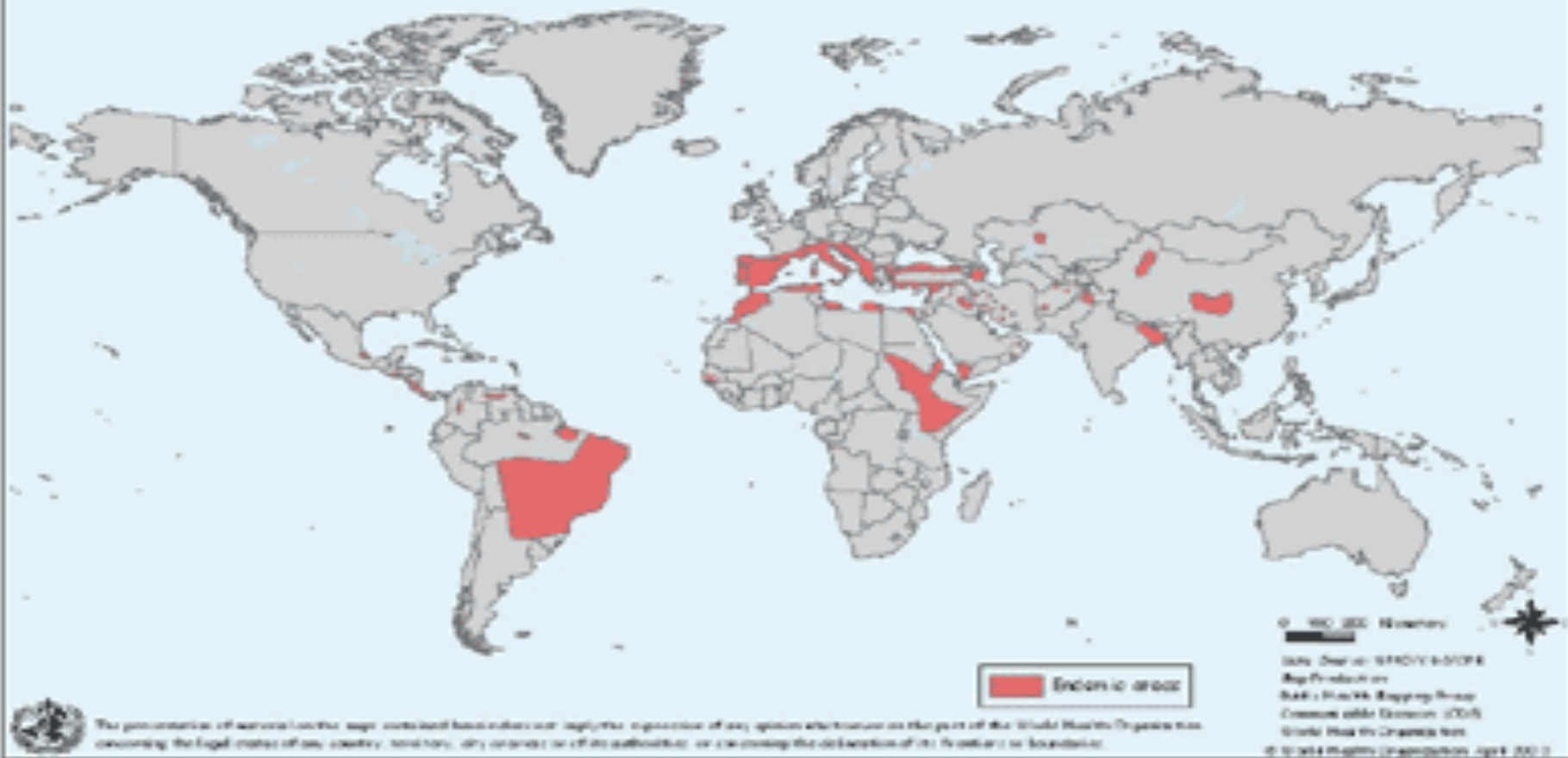
# Geographic distribution of Cutaneous Leishmaniases





# World distribution of Visceral Leishmaniasis

Distribution of Old World and New World Visceral Leishmaniasis

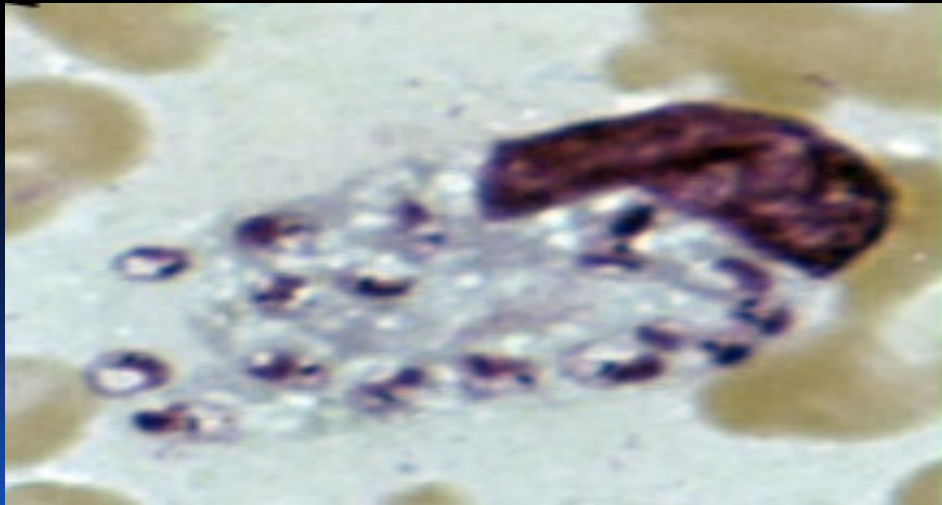
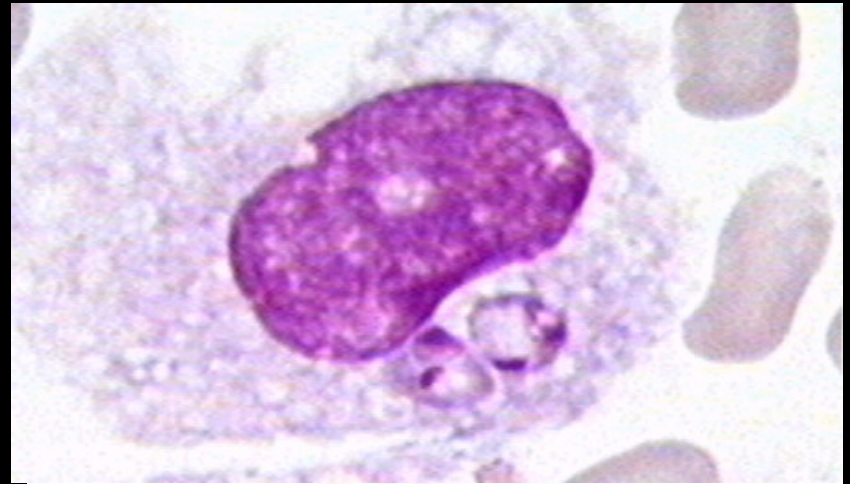
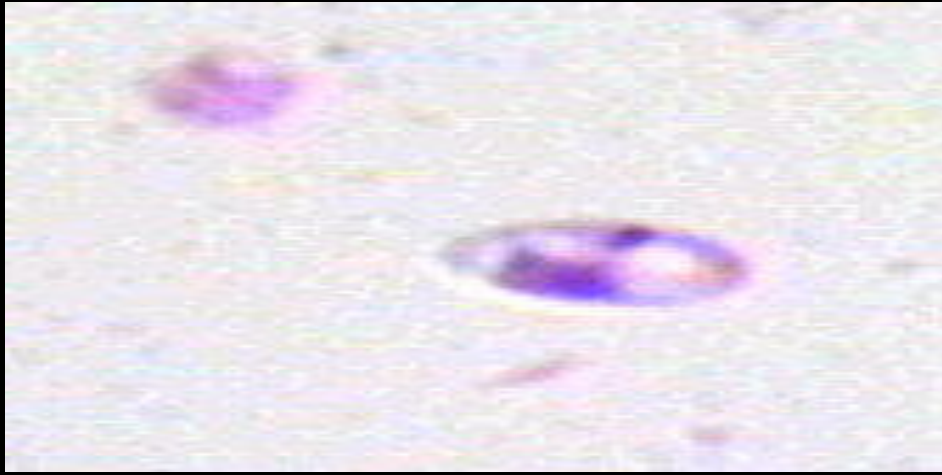


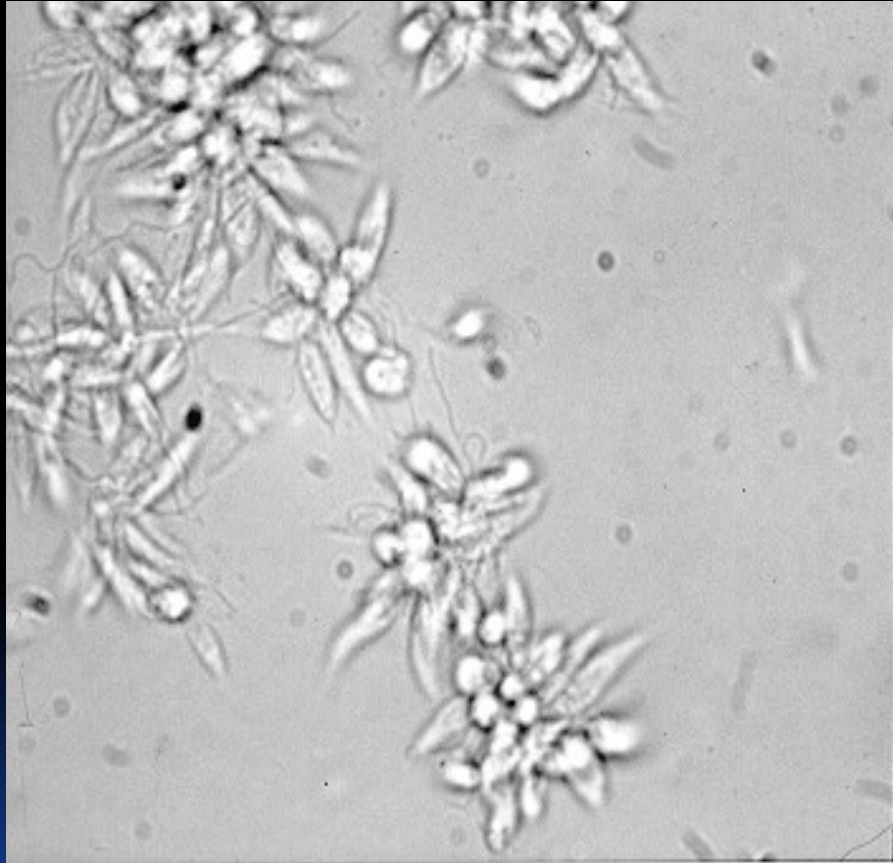
# Sand fly





# Amastigotes of Leishmania

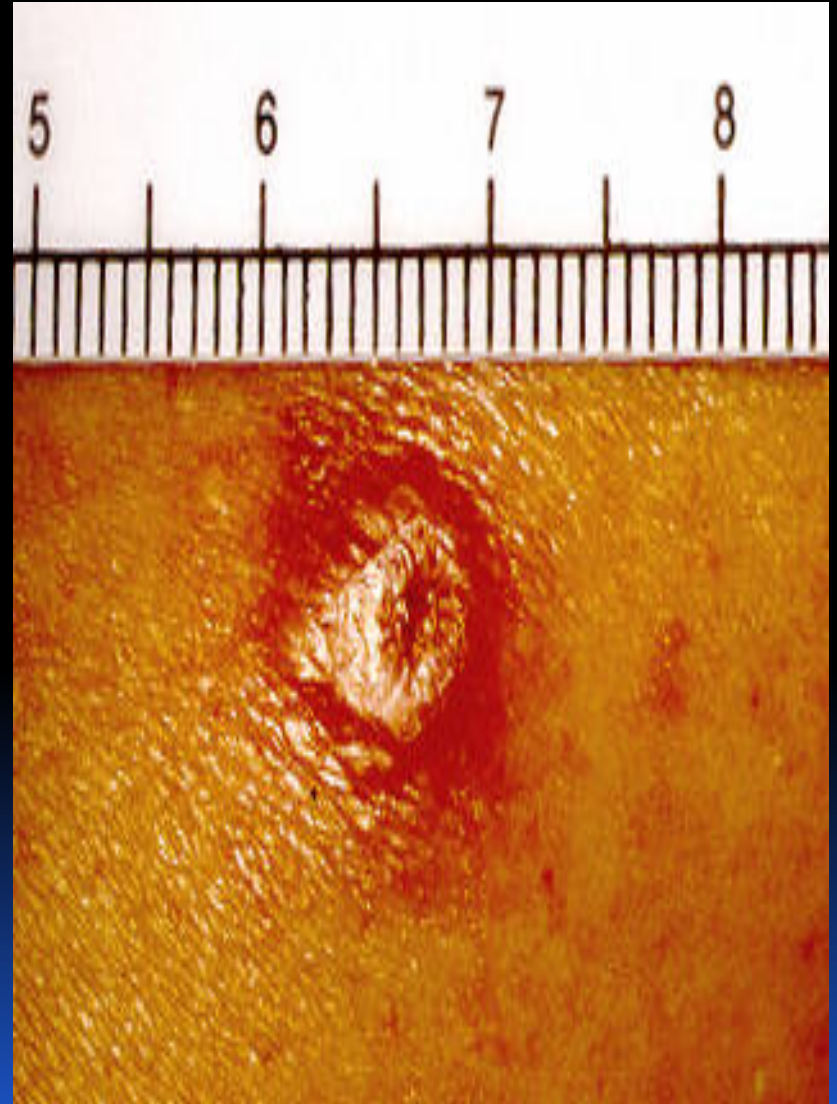




Promastigotes of Leishmania



# lesion of cutaneous leishmaniasis



## Clinical types of cutaneous leishmaniasis

- *Leishmania major*: Zoonotic cutaneous leishmaniasis: wet lesions with severe reaction
- *Leishmania tropica*: Anthroponotic (human to human) cutaneous leishmaniasis: Dry lesions with minimal ulceration

Oriental sore (most common) classical self-limited ulcer

# CUTANEOUS LISHMANIASIS THE COMMON TYPE

This starts as a painless papule on exposed parts of the body ,generally the face.

The lesion ulcerates after a few months producing an ulcer with an indurate margin.

In some cases the ulcer remains dry and heals readily (**dry-type-lesion**) .

In some other cases the ulcer may spread with an inflammatory zone around , these known as (**wet-type-lesion**) which heal slowly.





# UNCOMMON TYPES OF CUTANEOUS

## LISHMANIASIS

- Diffuse cutaneous leishmaniasis (DCL):

Caused by *L. aethiopica*, diffuse nodular non-ulcerating lesions, seen in a part of Africa, people with low immunity to *Leishmania* antigens. Diffuse cutaneous (DCL), and consists of nodules and a thickening of the skin, generally without any ulceration, it needs numerous parasite.

- Leishmaniasis recidiva (lupoid leishmaniasis):

Severe immunological reaction to *leishmania* antigen leading to persistent dry skin lesions, few parasites.

**Diffuse cutaneous  
leishmaniasis(DCL)**



**Leishmaniasis recidiva**

## Mucocutaneous leishmaniasis

The lesion starts as a pustular swelling in the mouth or on the nostrils. The lesion may become ulcerative after many months and then extend into the naso-pharyngeal mucous membrane.

Secondary infection is very common with destruction of the nasal cartilage and the facial bone. |



# cutaneous & muco-cutaneous leishmaniasis

## Diagnosis:

The parasite can be isolated from the margin of the ulcer.

Smear: Giemsa stain – microscopy for LD bodies (amastigotes).

- Biopsy: microscopy for LD bodies or culture in **NNN** medium for promastigotes.



# NNN medium



# Treatment

- No treatment – self-healing lesions
- Medical:
  - **Pentavalent antimony (Pentostam),**
  - Antifungal drugs
  - +/- Antibiotics for secondary bacterial infection.
- Surgical:
  - Cryosurgery
  - Excision
  - Curettage

REFERENCE :WHO (2010) Control of leishmaniasis. Report of a meeting of an expert committee on the control of leishmaniasis.  
[http://whqlibdoc.who.int/trs/WHO\\_TRS\\_949\\_eng.pdf](http://whqlibdoc.who.int/trs/WHO_TRS_949_eng.pdf)



# Visceral leishmaniasis

- There are geographical variations.
- The disease is called **kala-azar**
- *Leishmania infantum* mainly affect children
- *Leishmania donovani* mainly affects adults
- The incubation period is usually 4-10 months.
- The early symptoms are generally low grade fever with malaise and sweating .
- In later stages ,the fever becomes intermittent and there can be liver enlargement or spleen enlargement or hepatosplenomegally because of the hyperplasia of the lymphoid –macrophage system.



# Presentation

- Fever
- Splenomegaly, hepatomegaly, hepatosplenomegaly
- Weight loss
- Anaemia
- Epistaxis
- Cough
- Diarrhoea

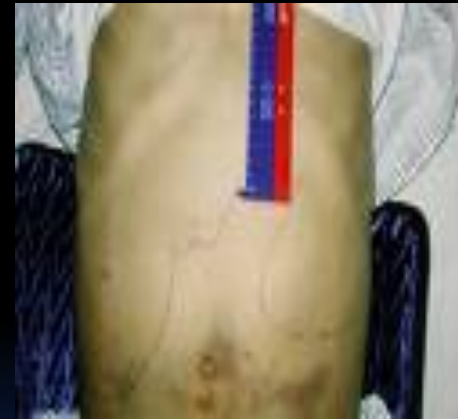
# Untreated disease can be fatal

After recovery it might produce a condition called post kala-azar dermal leishmaniasis (PKDL)





# Hepatosplenomegaly in visceral leishmaniasis



# Visceral leishmaniasis

## Diagnosis

### (1) Parasitological diagnosis:

**Bone marrow aspirate**

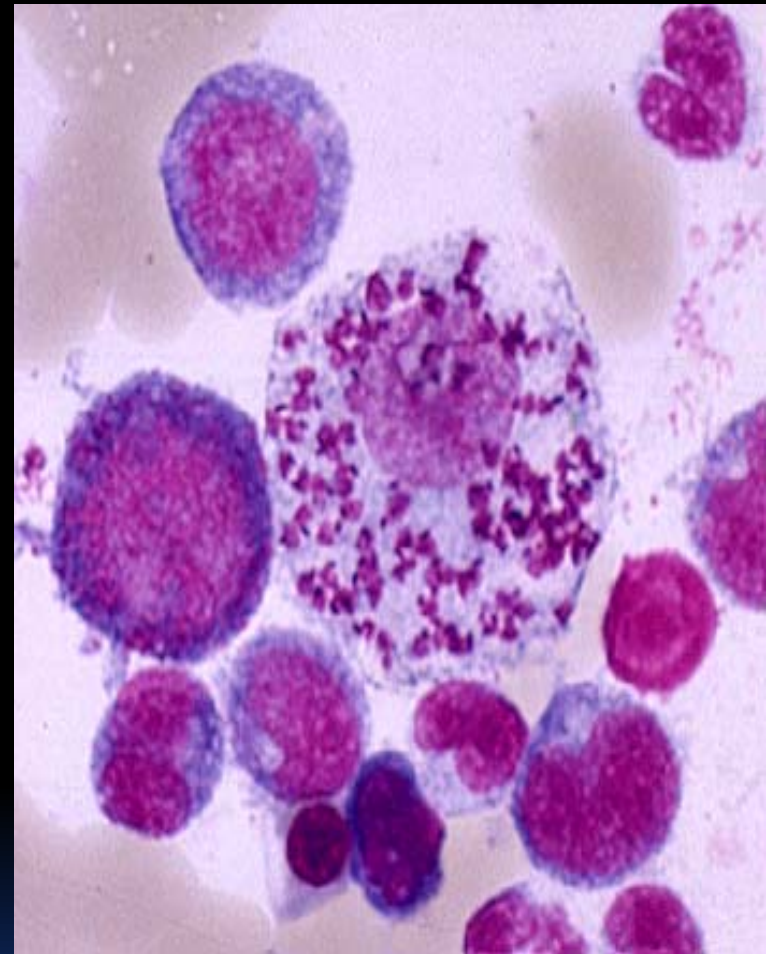
Splenic aspirate

Lymph node

Tissue biopsy

1. microscopy  
2. culture in NNN medium

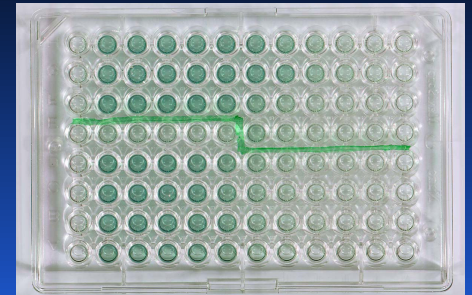
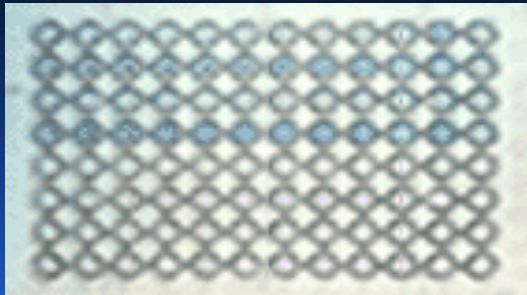
## Bone marrow aspiration



Bone marrow amastigotes

## (2) Immunological Diagnosis:

- Specific serologic tests: Direct Agglutination Test (DAT), ELISA, IFAT
- Skin test (leishmanin test) for survey of populations and follow-up after treatment.



# Treatment of visceral leishmaniasis

- Recommended treatment varies in different endemic areas:
  - Pentavalent antimony- sodium stibogluconate (Pentostam)
  - Amphotericin B

## Treatment of complications:

- Anaemia
- Bleeding
- Infections etc.

REFERENCE :WHO (2010) Control of leishmaniasis. Report of a meeting 571 of the WHO expert committee on the control of leishmaniasis. [http://whqlibdoc.who.int/trs/WHO\\_TRS\\_949\\_eng.pdf](http://whqlibdoc.who.int/trs/WHO_TRS_949_eng.pdf)