

# **Leishmaniasis 2**

## **Clinical Parasitology & Entomology**

### **FACTM Pt 1**

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# Study materials

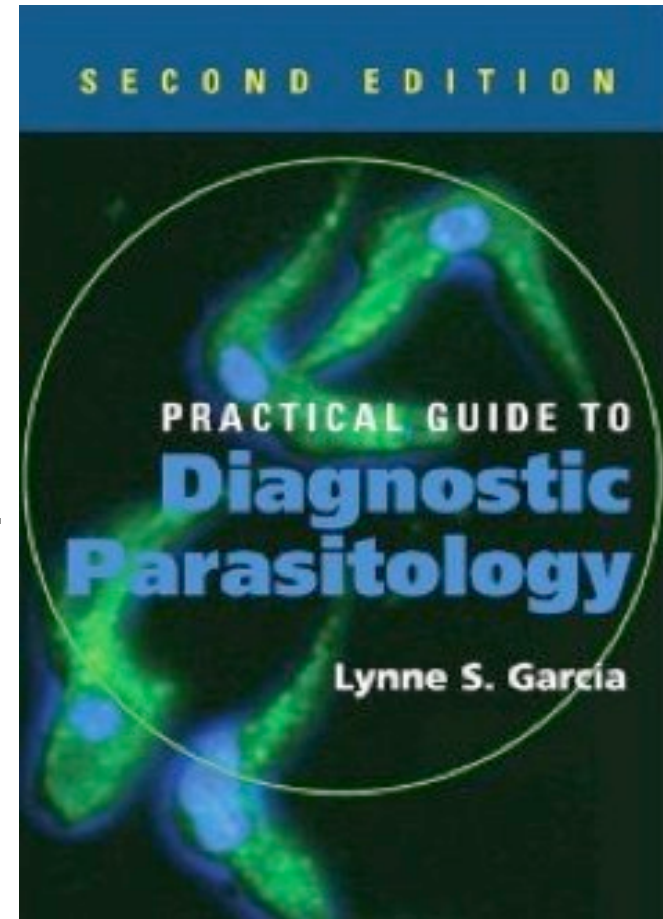
LEISMANIASIS 1  
LEISMANIASIS 2

**Practical Guide to Diagnostic Parasitology.**  
2<sup>nd</sup> Edition, Garcia LS. 2009. ASM Press.

**Medical Entomology for Students.**  
4<sup>th</sup> Edition, Service M. 2008. Cambridge.

Blog <http://micrognome.priobe.net>

Web [www.priobe.net](http://www.priobe.net)



# Leishmania

Protozoan

Apicomplexan

Kinetoplastida

2 subgenera:

- I Leishmania e.g. *L. donovani*, *L. infantum*, *L. tropica*, *L. mexicana* (Old & New World)
  - II Viannia e.g. *L. brasiliensis*, *L. guyanensis* (New World only)
- Many other species grouped together in series of complexes
  - Adansonian system



# Life cycle

**Stages;** dimorphic

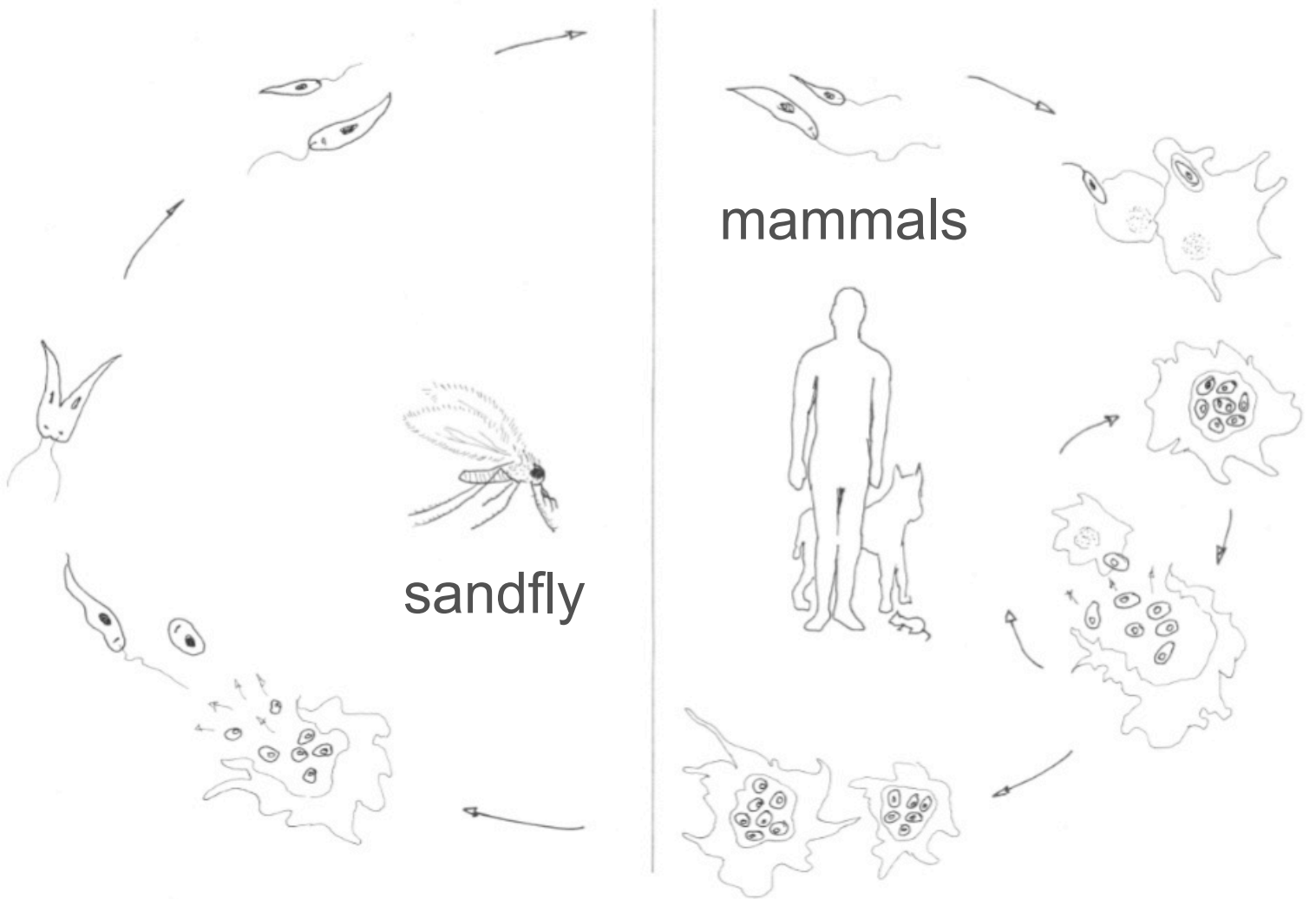
- (metacyclic) **promastigote**, elongated, anterior flagellum, kinetoplast, infective stage
- **amastigote**, rounded, 2-6µm, kinetoplast, internal flagellum, inside parasitophorous vacuole in mammalian macrophage



**Vector** – *Phlebotomus*, *Lutzomyia* spp. (Sand flies)  
Injection during blood feed of adult female



# Life cycle



# Lab methods

## Microscopy

- samples
- touch prep

## Culture

- Prior disinfection
- Growth on NNN medium

## NATs

Spleen, bone marrow, node Bx

Skin Bx

Blood

Other tissues



# Antiparasitic agents

## Authorised use

- liposomal amphotericin

## Demonstrated efficacy

- pentavalent antimonials
  - Na stibogluconate
  - Meglumine
- Melfosine
- Fluconazole



# Sand flies

- *Phlebotomus*
- *Lutzomyia*
- Habitat
- Distribution
- Regional vectors



# Sandfly features

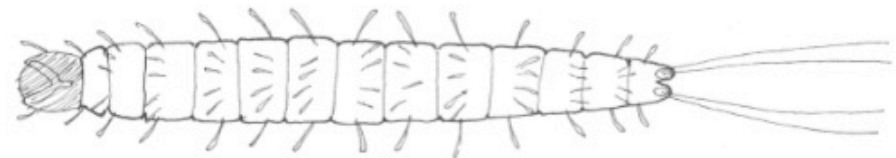
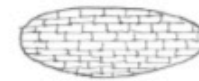
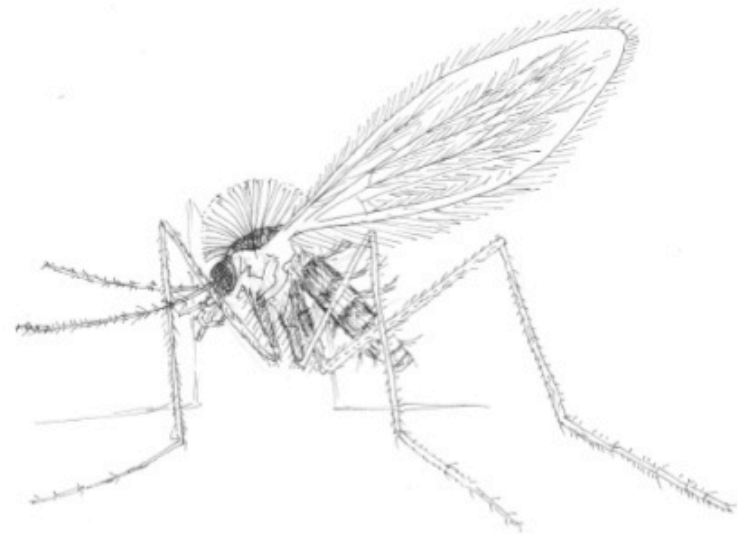
**Adults:** bite at or after dusk,  
weak fliers, circa 100m, exophilic

- Small size, 1.5-3.5 mm
- Hairy
- Large black eyes
- Stilt-like legs
- Lozenge-shaped wings at 40° angle
- Twice branching wing vein #2

**Eggs:** mosaic pattern

**Larvae:** 4 instars, matchstick hairs,  
caudal bristles

**Pupae**



# Countermeasures

- **Reservoirs:** mammalian host – humans, dogs, rodents (11 eco-epidemiological systems)
- **Vectors:** clothing, repellent, bed nets, insecticide



# Emerging issues

- New agents of VL
- New biology
- Genome
- Taxonomy

