

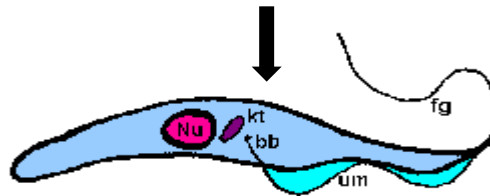
# Diagnosis

1- Clinical picture

2- Demonstration of **trypanosomes**:

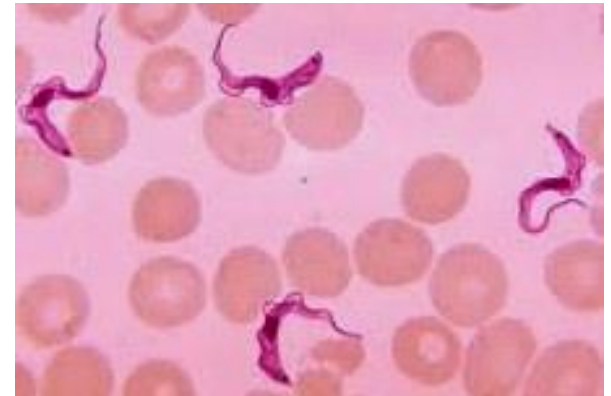
- Microscopic examination of thin and thick films unstained or stained blood films

- Culture on suitable medium (N.N.N OR Weinmann's - media to detect **Epimastigote**)



- Animal inoculation

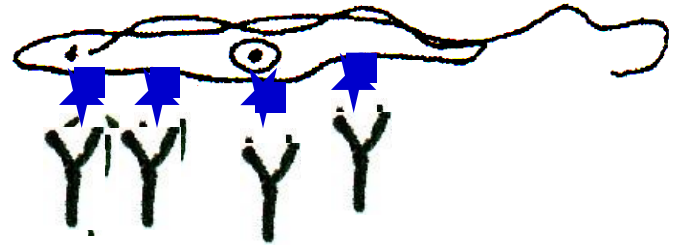
Polymorphic Trypanosomes



# Diagnosis

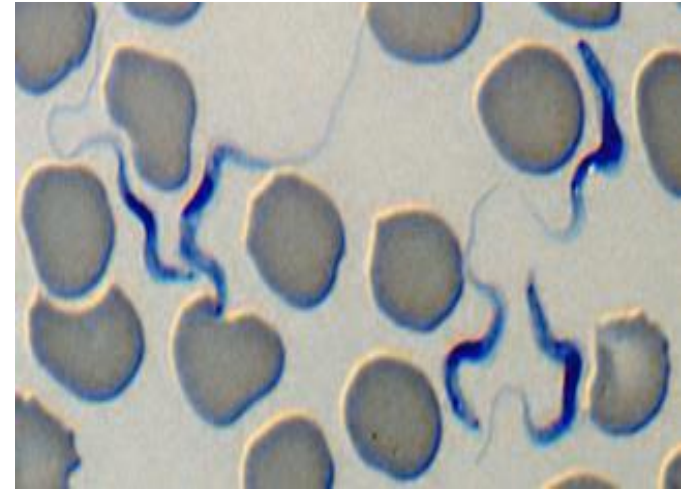
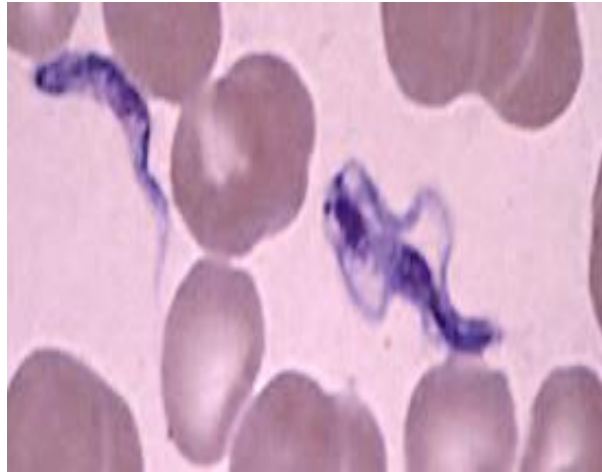
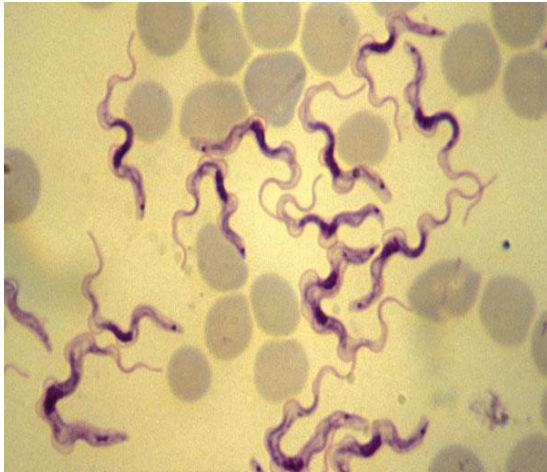
## 3- Serological test:

Increased total IgM level in serum due to antigenic variation of the surface coat of the parasite.



Trypanosome possesses genes that code for about 1000 variant forms of their surface glycoproteins (SVG). Switch to a different variant produces a new generation not susceptible to attack by immune factors specific to the previous generation.

# Diagnosis



C.S.F



# Treatment

For the acute stages of the disease the drug of choice is suramin with pentamidine as an alternative.

In chronic disease with CNS involvement, the drug of choice is melarsoprol.

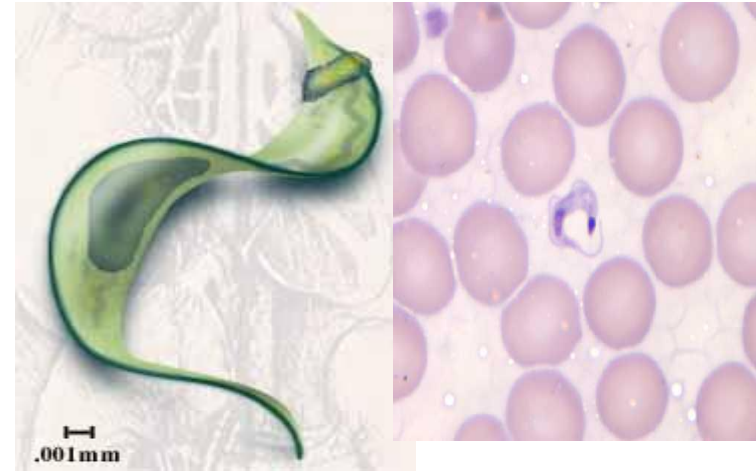
Alternatives include tryparsamide combined with suramin.

# ***Trypanosoma cruzi*** causing Chagas' disease

## Morphology

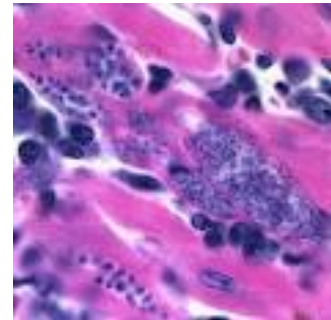
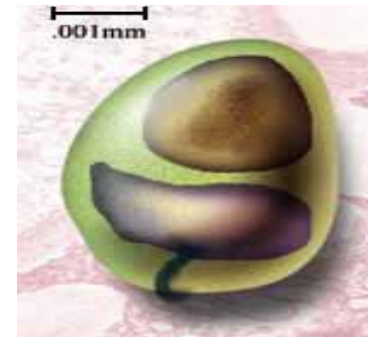
### **Trypomastigote** (Monomorphic)

Slender shaped (20 $\mu$ ) – Central nucleus –  
C or U-shaped – Free flagellum 1/3 body –  
Large bulging peripheral kinetoplast



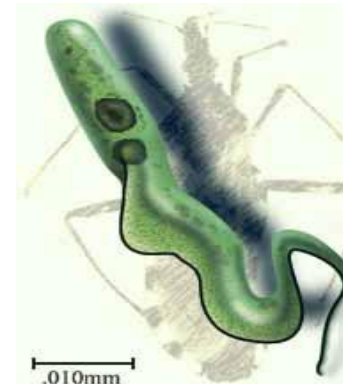
### **Amastigote**

Obligatory intracellular – mainly in cardiac &  
Skeletal muscles – Brain meninges – Nerve  
ganglia – cells of GIT .... etc



### **Epimastigote** (Vector only)

Spindle shape – Kinetoplast anterior to central  
nucleus – Undulating membrane is short –  
terminal free flagellum



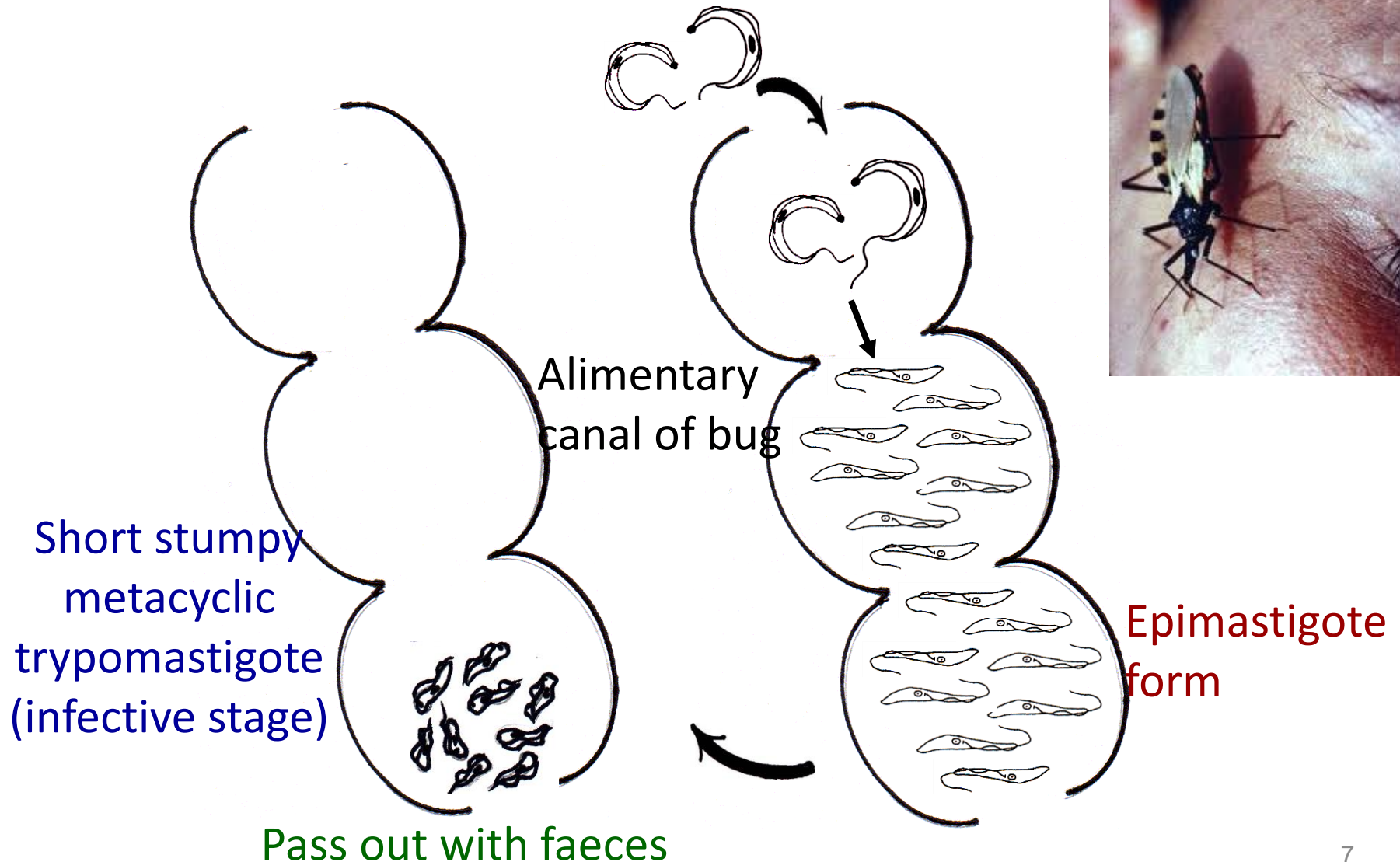


# Geographical Distribution of American Trypanosomiasis



# Mechanism of disease transmission by winged bug

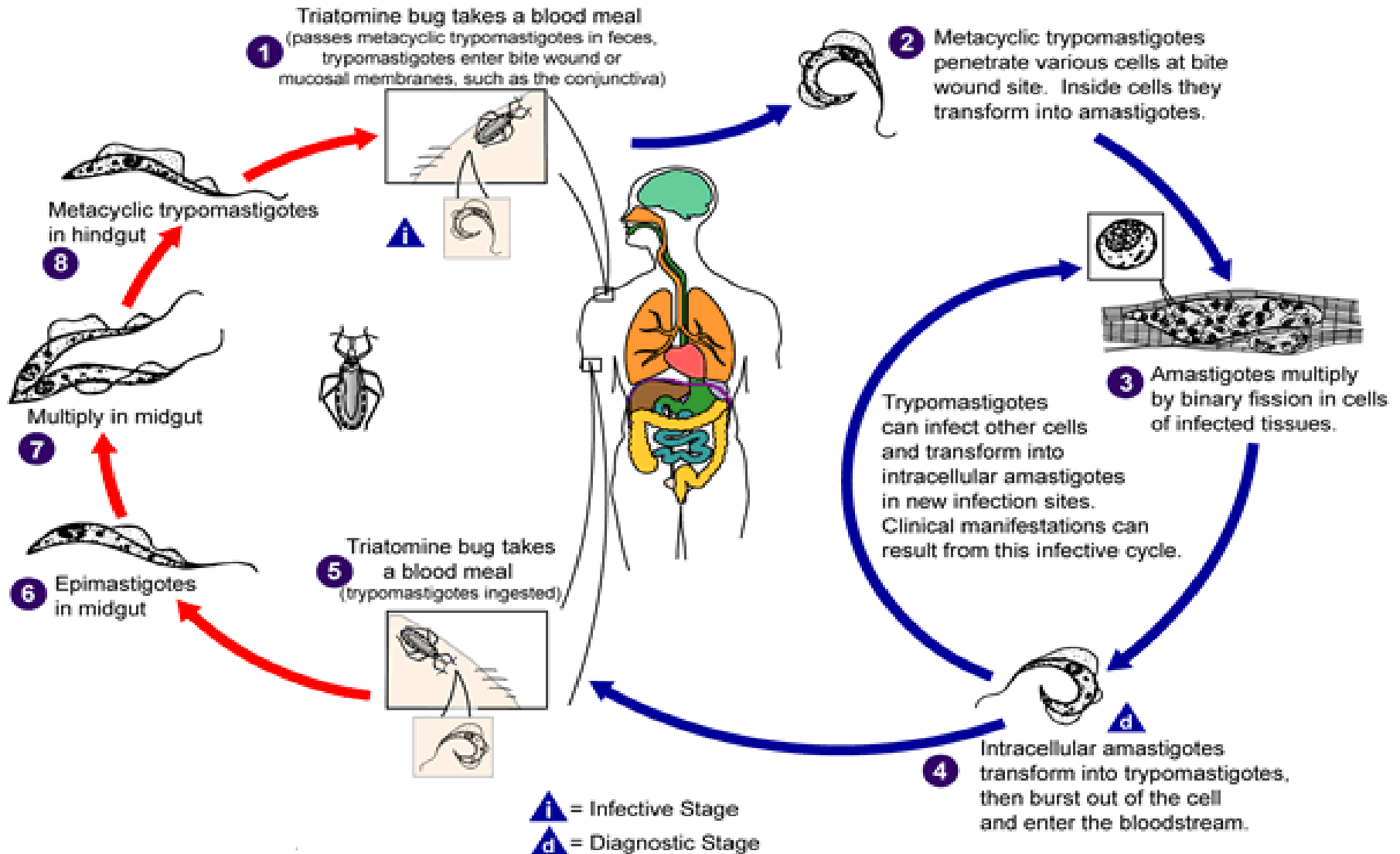
*T. cruzi* in human blood



# LIFE CYCLE OF *Trypanosoma cruzi*

## Triatomine Bug Stages

## Human Stages





# Mode of infection

Mainly by

Contamination of skin abrasion  
by winged bug faeces

Rarely by

Through infected blood transfusion

Through infected mother's milk

Through the placenta

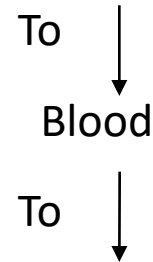


# Pathogenesis and Clinical Picture

## I- Acute Form

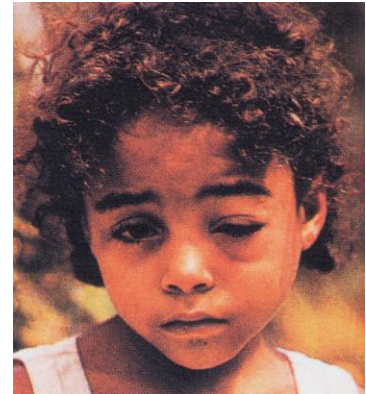
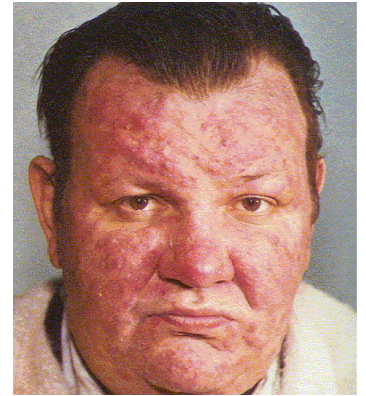
**Chagoma** occurs at the site of bite.

Parasite reaches regional lymph nodes



Organs and tissues

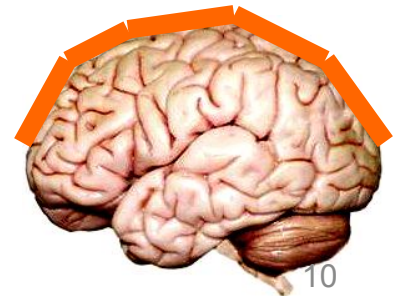
Fever, enlarged lymph nodes, skin rash, enlarged liver & spleen.



**Romana's sign** (Unilateral conjunctivitis appear suddenly togetherwith oedema of upper & lower eye lids & cheek)

Meningoencephalitis, heart failure

Death or pass to Chronic form



# Pathogenesis and Clinical Picture

## II- Chronic form

Parasite produces antigens similar to patient's self antigens:  
The body produces auto-antibodies that cause damage to:

- ❑ Heart muscle fibres:  
congestive heart failure.
- ❑ Oesophageal muscle fibres:  
megaoesophagus and dysphagia.  
Destruction of Auerbach's plexus
- ❑ Colon muscle fibres:  
megacolon and constipation.
- ❑ CNS or thyroid gland  
Exacerbation of infection in immunosuppressed patients.

Amastigote form of  
*T.cruzi*



# Diagnosis

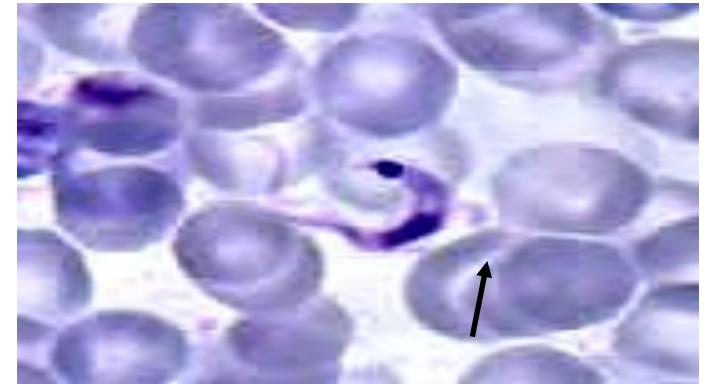
Finding the parasite in:

Blood film (C-shaped *T. cruzi*)

Biopsy from lymph node, liver or spleen (amastigotes)



Culture (Epimastigotes)

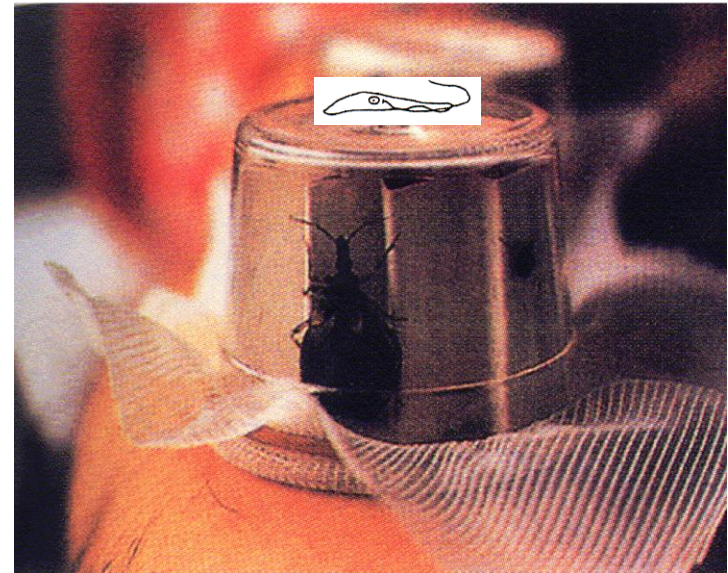


## Xenodiagnosis

Serological tests

Cruzin test (I.D.)

Molecular techniques





# Diagnosis (Xenodiagnosis)



Highly efficient – demonstrate low level of parasite in blood

## **Method:**

A Laboratory bred winged bug is starved for 2 weeks then fed on suspected patient's blood – 30 days later, it faeces & gut examined for trypanosomes.

# Diagnosis

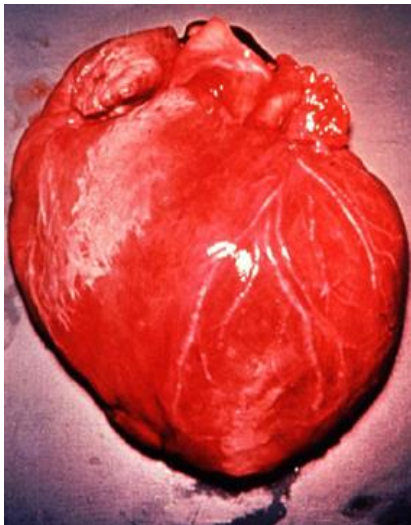
Amastigote



Trypomastigote



Winged Bug



Romana's sign



# Treatment

## Sleeping Sickness

In early stage of the disease:

Pentamidine OR Suramin

In late stages of the disease:

Tryparsamide

For both early and late stages of the disease:

Eflornithine (DFMO) Ornidyl

## Chagas Disease

Nifurtimox

- inhibits intracellular development .
- Drug of choice in acute and early chronic

OR

Primaquine

destroys **Trypanosoma** in blood

# Control

## Sleeping Sickness

Treatment of patients

Control of vectors  
(*Glossina*)

Pentamidine as  
prophylactic drug

## Chagas' disease

Treatment of patients

Control of vectors  
(*Triatoma*)

Elimination of reservoir  
hosts