

## Symptoms

Individuals become infected through ingesting from contaminated food, soil, or water.

Acute or chronic diarrhea, dehydration, abdominal pain and weight loss.

The clinical signs of human giardiasis depend on various **factors** such as:

Duration of infection, the physiological condition of the host, and parasitic factors.

The incubation period is usually 9–15 days.

## *Trichomonas vaginalis*

This protozoan parasitizes in the vagina and urethra, and causes vaginitis, and urethritis.

*Trichomoniasis vaginalis* is prevalent all over the world.

## Morphology

Only the trophozoite stage is found in its life cycle.

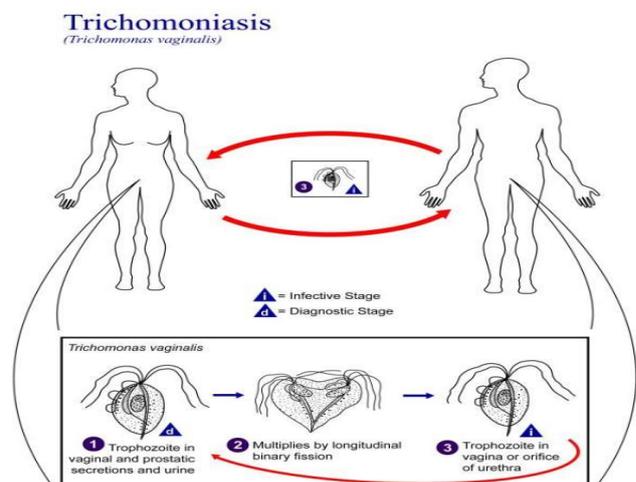
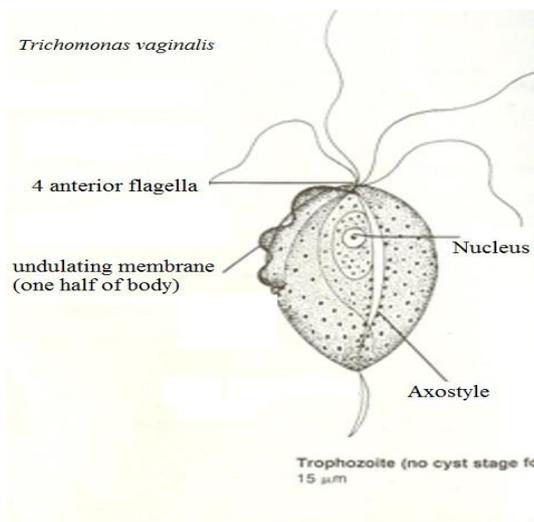
The **trophozoite** is ovoid or pear-shaped. It has 4 anterior flagella and one posterior flagellum which turns back and is attached to the body by an undulating membrane. The undulating membrane is very short, only one-half of its body length.

**Internal organelles** include a nucleus and a rigid structure, the axostyle that runs through the cell from the anterior end to the posterior end.

## Life cycle

Transmit by direct or indirect contact

Trophozoite  $\xrightarrow{\text{Sexual life, swimming pool, swimsuit}}$  Trophozoite



## Symptoms

In **female**: itching of the genital area, inflammation, vaginal discharge.

In **male**: asymptomatic, urethritis may occur, causing frequency of urination or dysuria.

Incubation period is 4 to 28 days

## Blood and tissue protozoa

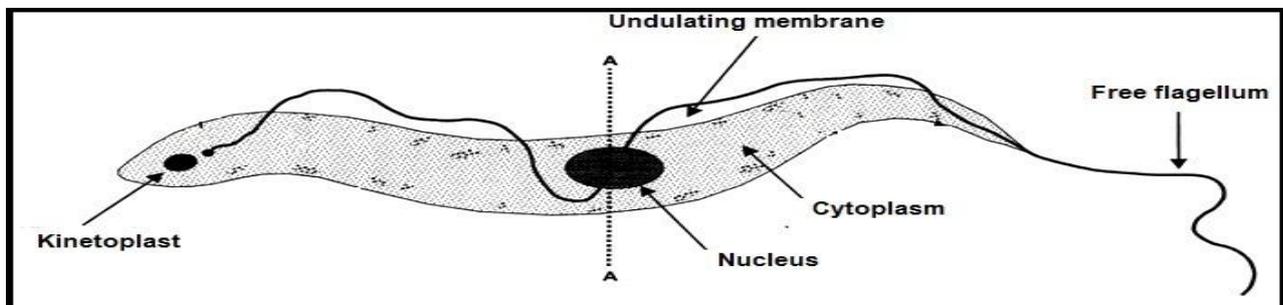
### *Trypanosoma brucei*

*Trypanosoma brucei* is a species of trypanosome causes African trypanosomiasis, known also as **sleeping sickness** in humans which acquired by tsetse fly, blood and shared needle. The disease is endemic in African countries.

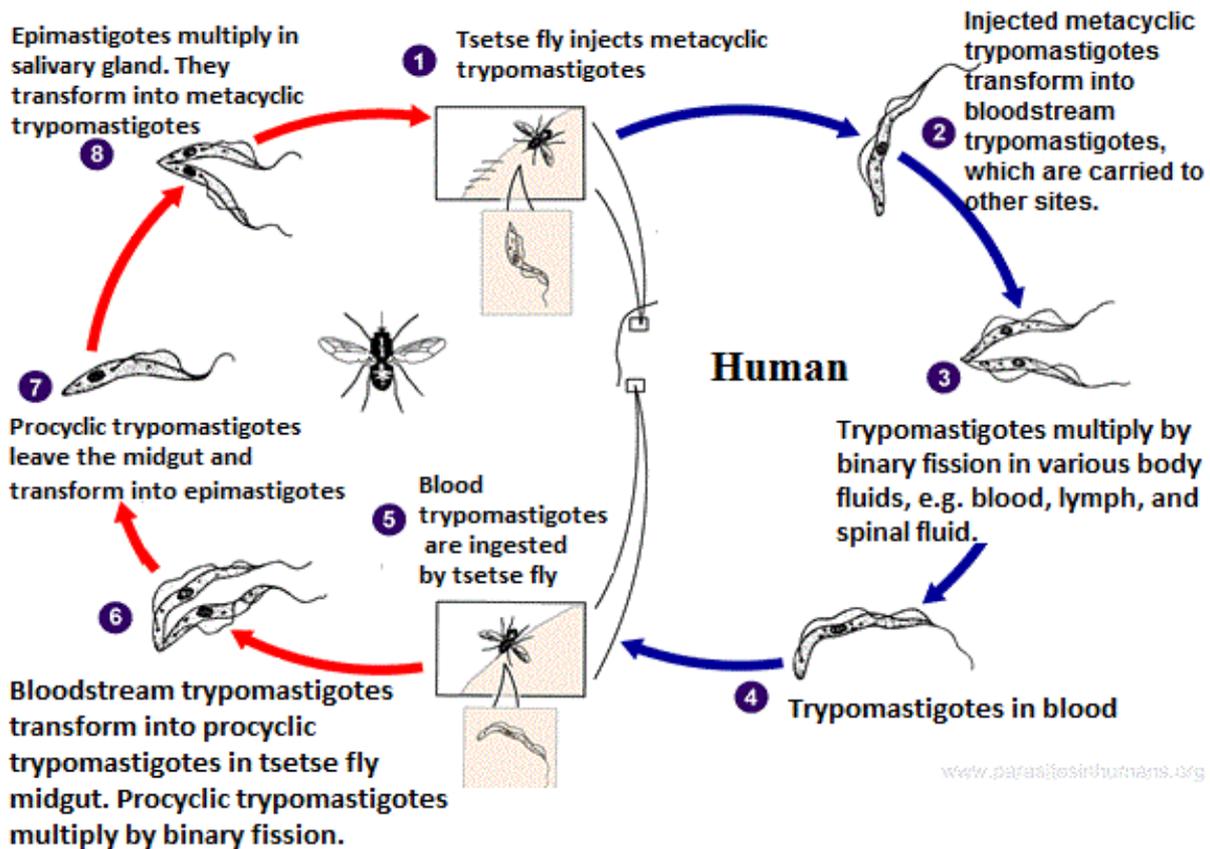
### *Morphology*

The bloodstream slender trypomastigote (10-30 x 1-3  $\mu\text{m}$ ) is a prokaryotic cell has a single central **nucleus** and a single **flagellum** originate at the **kinetoplast**.

The flagellum runs along the edge of the **undulating membrane** until the undulating membrane merges with the body at parasite anterior end where the flagellum becomes free to extend beyond the body.



## Life cycle



## Symptoms

African trypanosomiasis has three symptomatic stages, the last one is the most dangerous finally leading to death, if left untreated.

1. In 1–3 weeks after the bite a **chancre** can develop on the bite area.
2. Second stage: several weeks or months later *Trypanosoma* parasites in the blood, spinal and lymphatic fluid can cause:
  - Anemia, cardiac dysfunction, itching, fatigue, fever, headache, muscle or joint pain, enlargement of the spleen, swelling of the lymph nodes, low level of platelets, weight loss.
3. Final stage: the parasites enter the brain and cause inflammation which shows some of the following symptoms:
  - Blackouts, coma, confusion and abnormal behavior, death (within months or years), sleeping troubles, personality changes.

