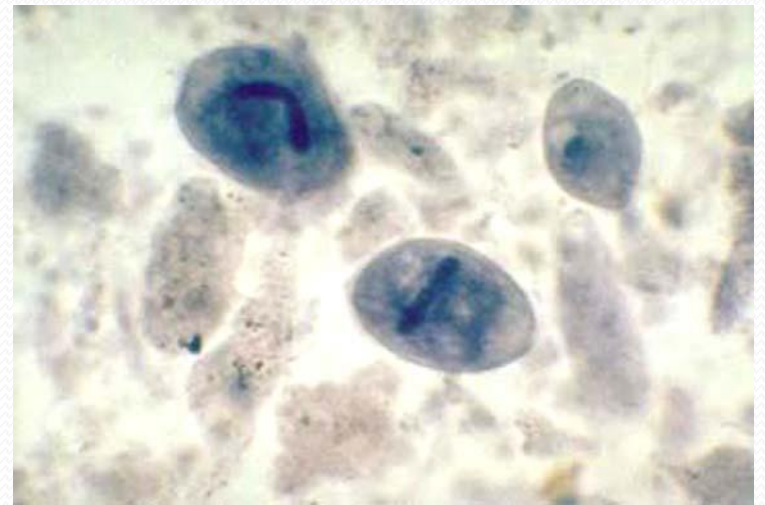
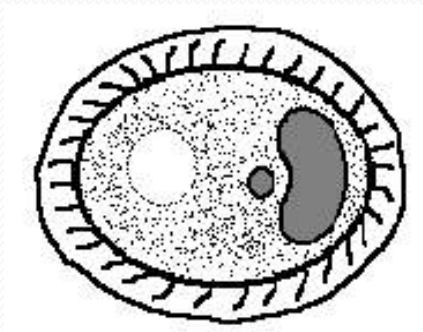
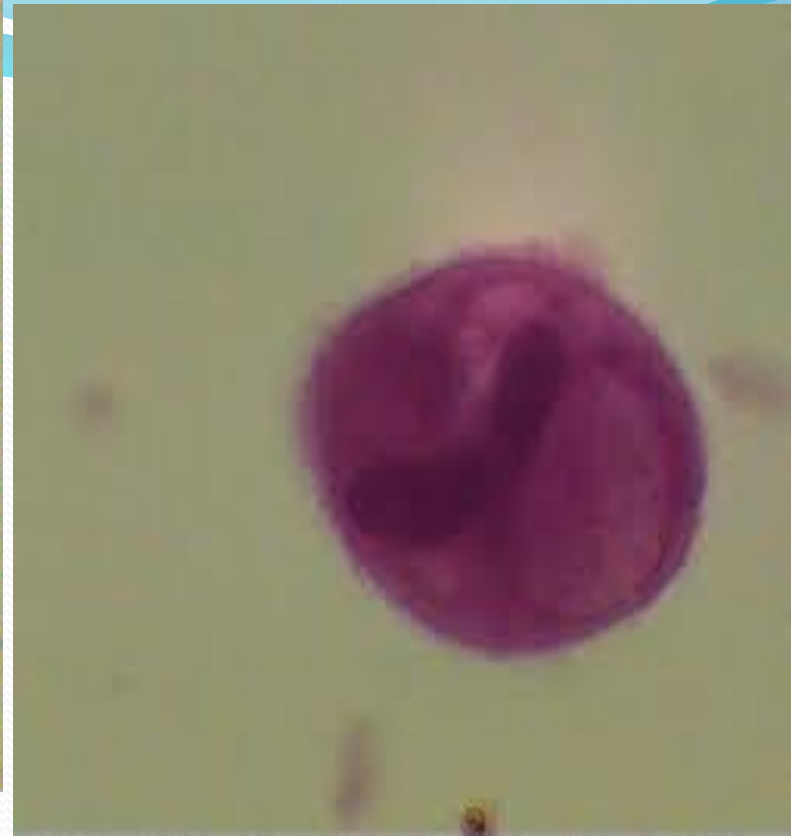


# L 2:- Parasitology

أ.م. صفاء رسن عبدالله

- **2. Class: Ciliophora: *Blantidium coli***
- *B. coli* has two types of nuclei: **macronucleus** that responsible for all activities of parasite except the reproduction, while **micronucleus** that responsible for the reproduction only.
- *B. coli* live in digestive system. It cause blantidiasis similar ameobiasis but differ from *E. histolytica* that invade the liver. It has two phases: troph. & cyst.
- Troph.: found in large intestine is consider largest parasite of protozoa, ovule shape, covered with equal long cilia have two nuclei **macronucleus** (kidney shape) & **micronucleus** (vascular shape). It has two contracted vacuoles & many vacuoles contain bacteria or RBC in the acute infection with this parasite.
- Cyst: spherical shape has thick cell wall but difficult to diagnostic nuclei.



Balantidium coli cyst & troph

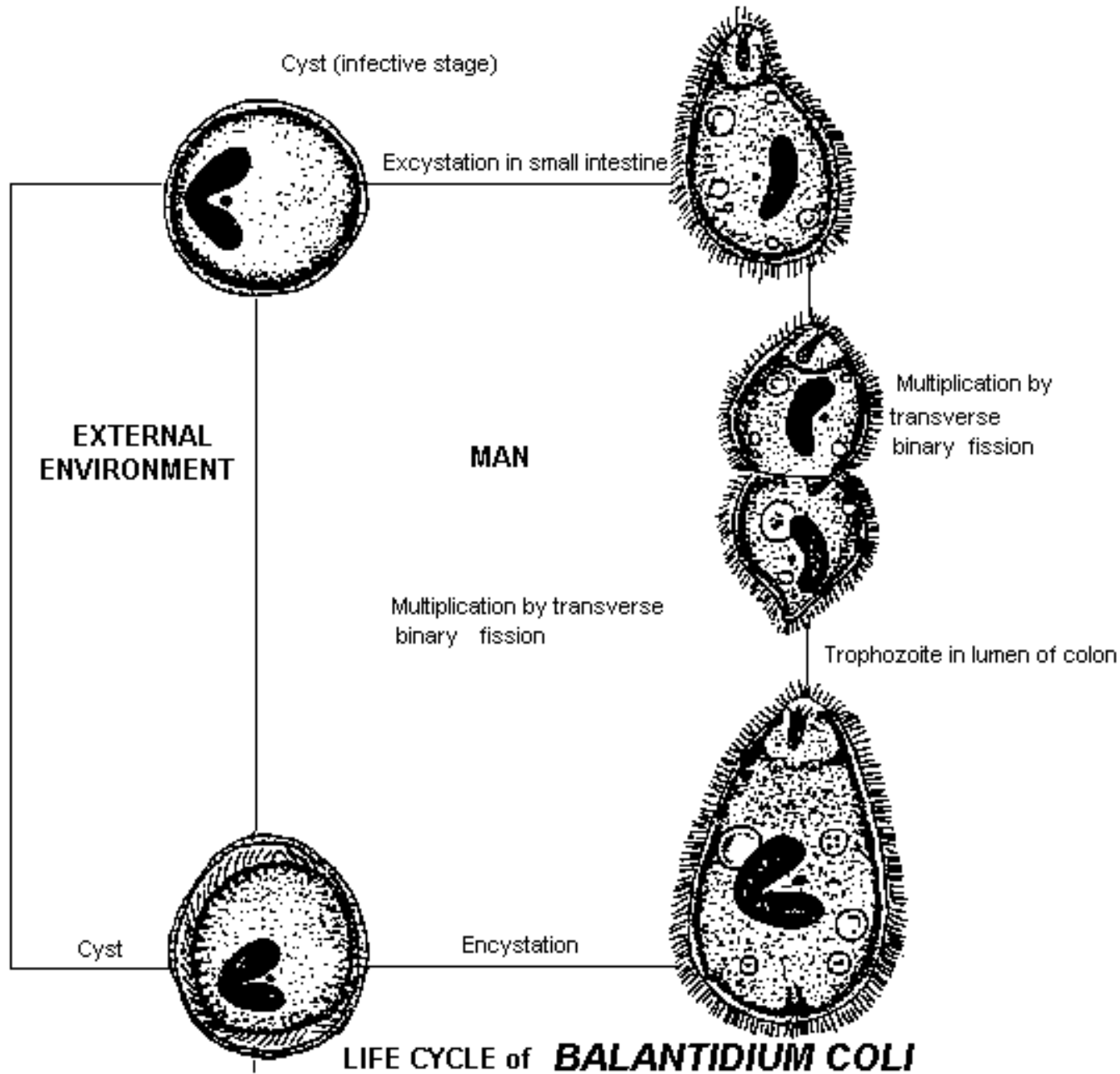
## • **Clinical symptoms**

- Balantidiasis. Symptomatic patients may experience a variety of discomforts, ranging from mild colitis and diarrhea to full – blown clinical balantidiasis, which may often resemble amebic dysentery. In this case, abscesses and ulcers may form in the mucosa and submucosa of the large intestine followed by secondary bacterial infection. Acute infections are characterized by up to 15 liquid stools per day containing pus mucus, and blood. Patients who suffer from chronic infections may develop a tender colon, anemia, cachexia, and occasional diarrhea, alternating with constipation. *Balantidium coli* has been known to invade areas other than the intestine, such as the liver, lungs, pleura, mesenteric nodes, and urogenital tract.

## • Life cycle

• Human infection with *B. coli* is initiated upon ingestion of infective cysts in contaminated food or water, unlike that of *E. histolytica*, multiplication of the *B. coli* nuclei does not occur in the cyst phase, following excystation in the small intestine, the resulting trophozoites take up residence and feed primarily in the cecal region and terminal portion of the ileum, as well as in the lumen, mucosa, and submucosa of the large intestine. The multiplication of each trophozoite occurs by transverse binary fission, from which two young trophozoites emerge. The *B. coli* trophozoites are delicate and do not survive in the outside environment. Encystation occurs in the lumen. The resulting cysts mature and ultimately become the infective form for transmission into a new host. These cysts may survive for weeks in the outside environment. The natural host of *Balantidium coli* is pigs. *Balantidium coli* is the only ciliate known to parasitize humans and inhabit in Large intestine





LIFE CYCLE of *BALANTIDIUM COLI*

# Control and Prevention

- **control** of *B. coli* = hygiene, Improvement of water supply and sewage and

Good health education

**Treatment** of *B. coli* = Metronidazol

### • 3. A:Class: Mastigophara (Flagellates)

#### • 1. *Giardia lamblia*

• ***Giardia lamblia*** causes *giardiasis*, living in duodenum. The live cycle consists of two stage: trophozoite & cyste

• **1.Trophozoite:** is pear-shaped (symmetric organism), length 9-21 $\mu$ , with two nuclei, four pairs of flagella, two axostyles and a suction disk which it attaches to the intestinal wall.

• **2.Cyst** is ellipsoid or oval cyst is thick walled with four nuclei and several internal fibers, length 8-12  $\mu$ . Each cyst gives rise to two troph. during excystation in the intestinal tract. cyst is the dormant stage of *Giardia lamblia*





giardia\_cyst&\_troph

- **-Pathogenesis:** transmission occurs by ingestion of the cyst in focally contaminated food and water. Excystation takes place in the duodenum. Where the troph. attaches to the gut wall but does not invade. Troph. **Causes inflammation of the duodenum mucosa, leading to malabsorption of protein and fat.**
- **-Clinical finding:**
- Giardiasis (“Traveler’s Diarrhea”). Symptomatic infections with *Giardia lamblia* may be characterized by a wide variety of clinical symptoms, ranging from mild diarrhea (watery, non bloody, foul smelling diarrhea (semi solid: and **greasy or fatty**), abdominal cramps, anorexia, and flatulence to tenderness of the epigastric region steatorrhea, and malabsorption syndrome. Patients suffering from a severe case of giardiasis produce light – colored stools with a light fat content that may be caused by secretions produced by the irritated mucosal lining. Fat soluble vitamin deficiencies, folic acid deficiencies, hypoproteinemia with hypogammaglobulinemia, and structural changes of the intestinal villa may also be observed in such cases.

- -- **Diagnosis :**

- 1. by finding troph. Or cyst or both in diarrhea stool

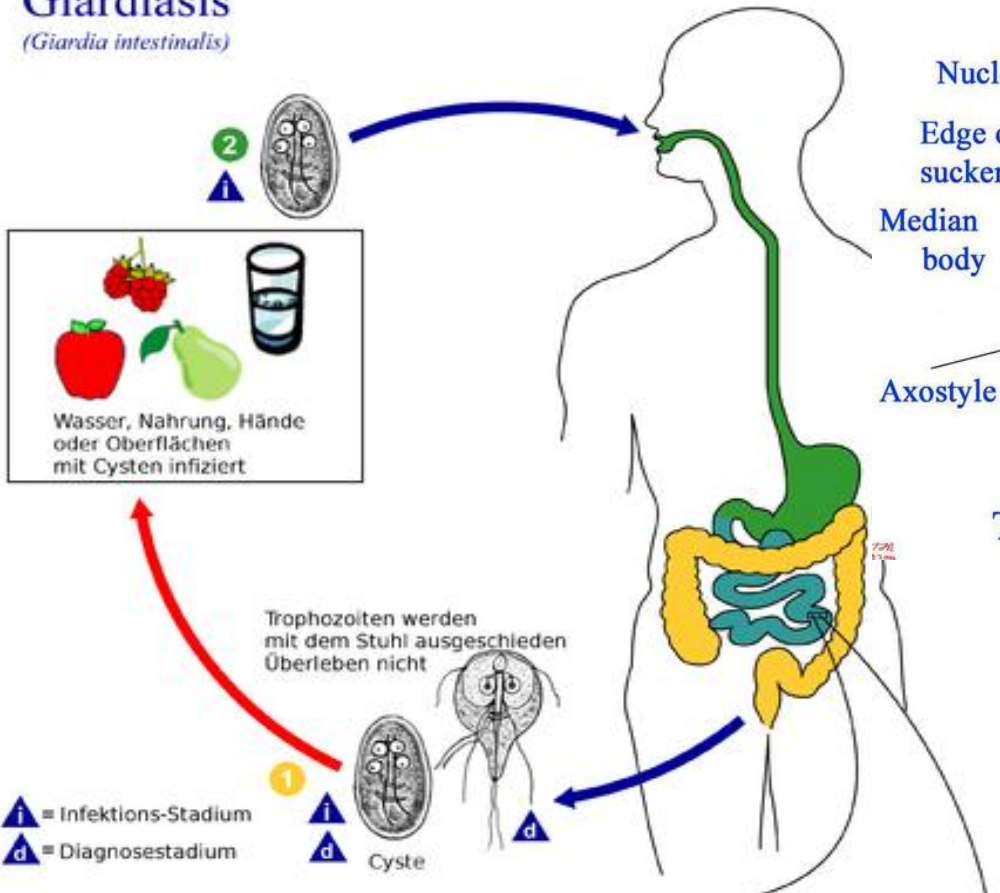
- 2. using ELISA test

- 3.string test

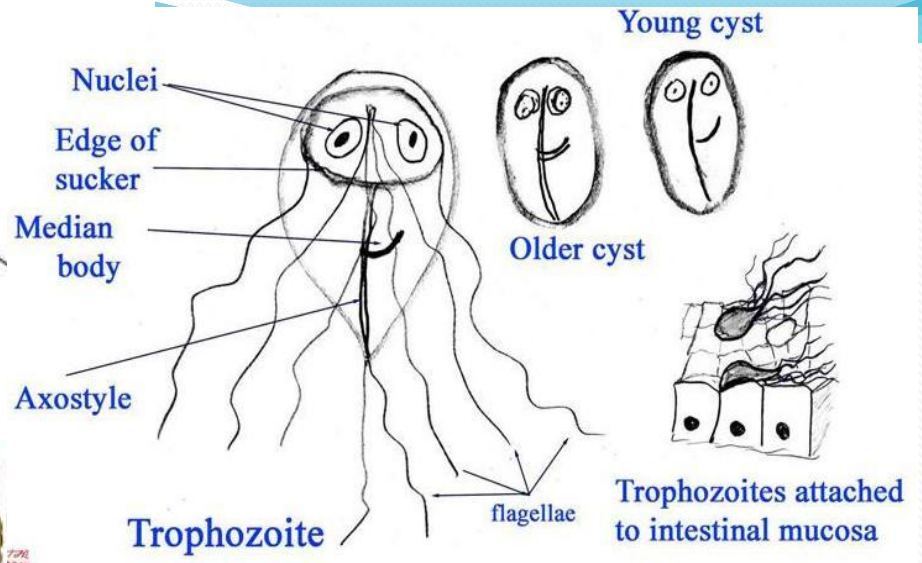
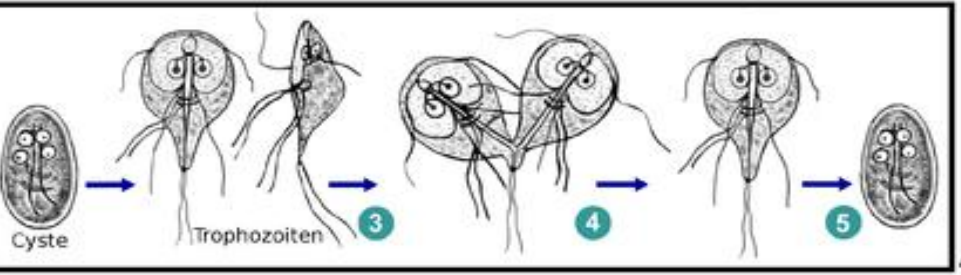
- - **diagnostic stages are troph. Or cyst or both in diarrhea stool. The infective stage is cyst.**

# Giardiasis

(*Giardia intestinalis*)



Trophozoiten werden mit dem Stuhl ausgeschieden  
Überleben nicht



# Control and Prevention

- **control** of *Giardia lamblia* = hygiene,  
Improvement of water supply and sewage and  
Good health education
- **Treatment** of *Giardia lamblia* = Metronidazole or  
Tinidazole

## • 2. *Trichomonas vaginalis*

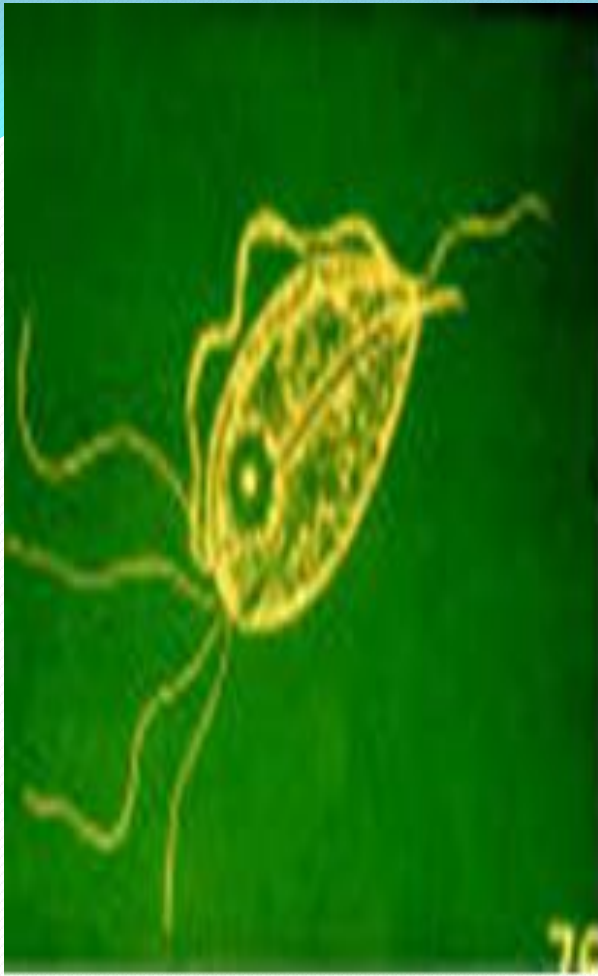
1. Pathogenic to human & causes vaginitis (trichomoniasis).
2. **troph.** Is round or pear like in shape, contains 4-6 flagella, all originating from anterior end & only one extend posteriorly. The motility is rapid & jerky.

The **undulating membrane extending half of the body length**. Prominent axostyle that often curves around the nucleus & granules may be seen along in the axostyle. The nucleus is oval shape & only one. **No cyst is seen.**

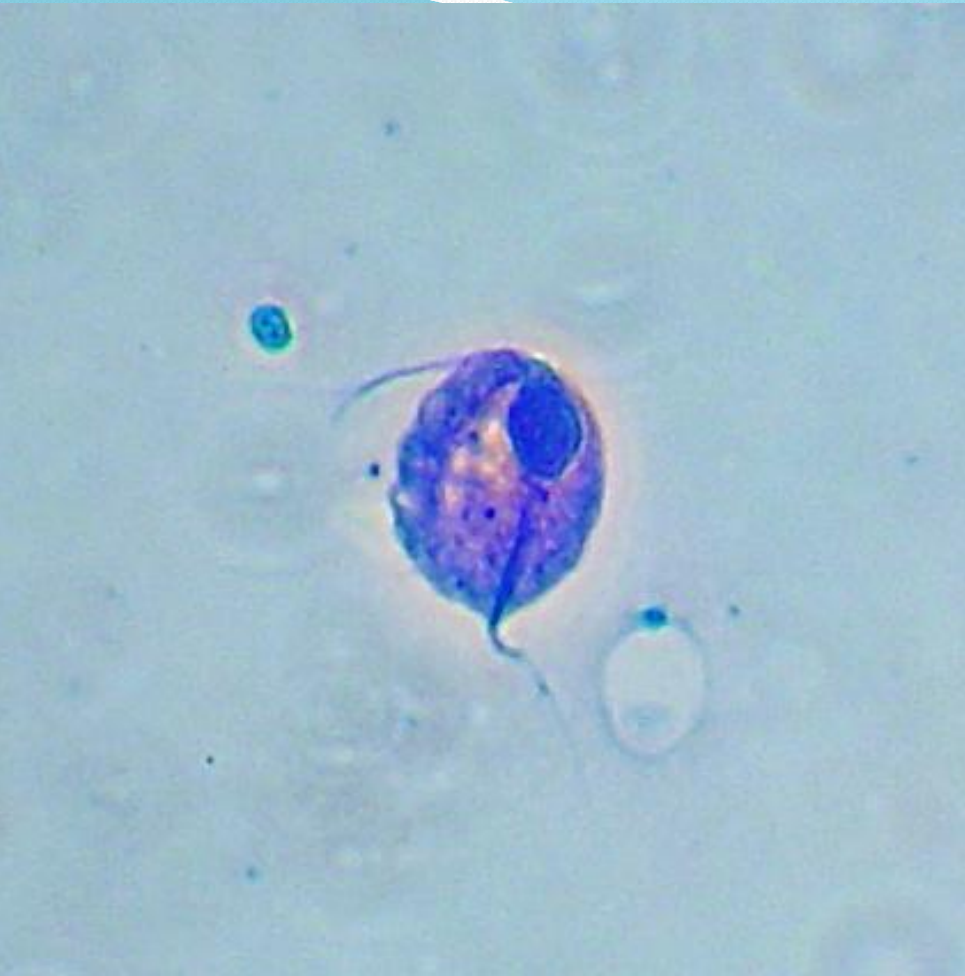
### **Clinical symptoms**

1. *T. vaginalis* reside on the mucosal surface of the vagina in infected women.
2. The most common sites in **male is the prostate gland region & the epithelium of the urethra.**
3. **Vaginitis** may be found in infected women. It is characterized by foul smelling, **greenish-yellow, vaginal discharge, burning & itching** may also present. **Red lesions may be seen in vaginal mucosa. Urethral involvement, dysuria & increased frequency of urination** are among the most commonly symptoms. Cystitis is rare occur.
4. The main mechanism of *T. vaginalis* pathogenicity is cell to cell adherence & hemolysis and secreting soluble proteinases in both males and females human host





*Trichomonas tenax*



Trichomonas vaginalis

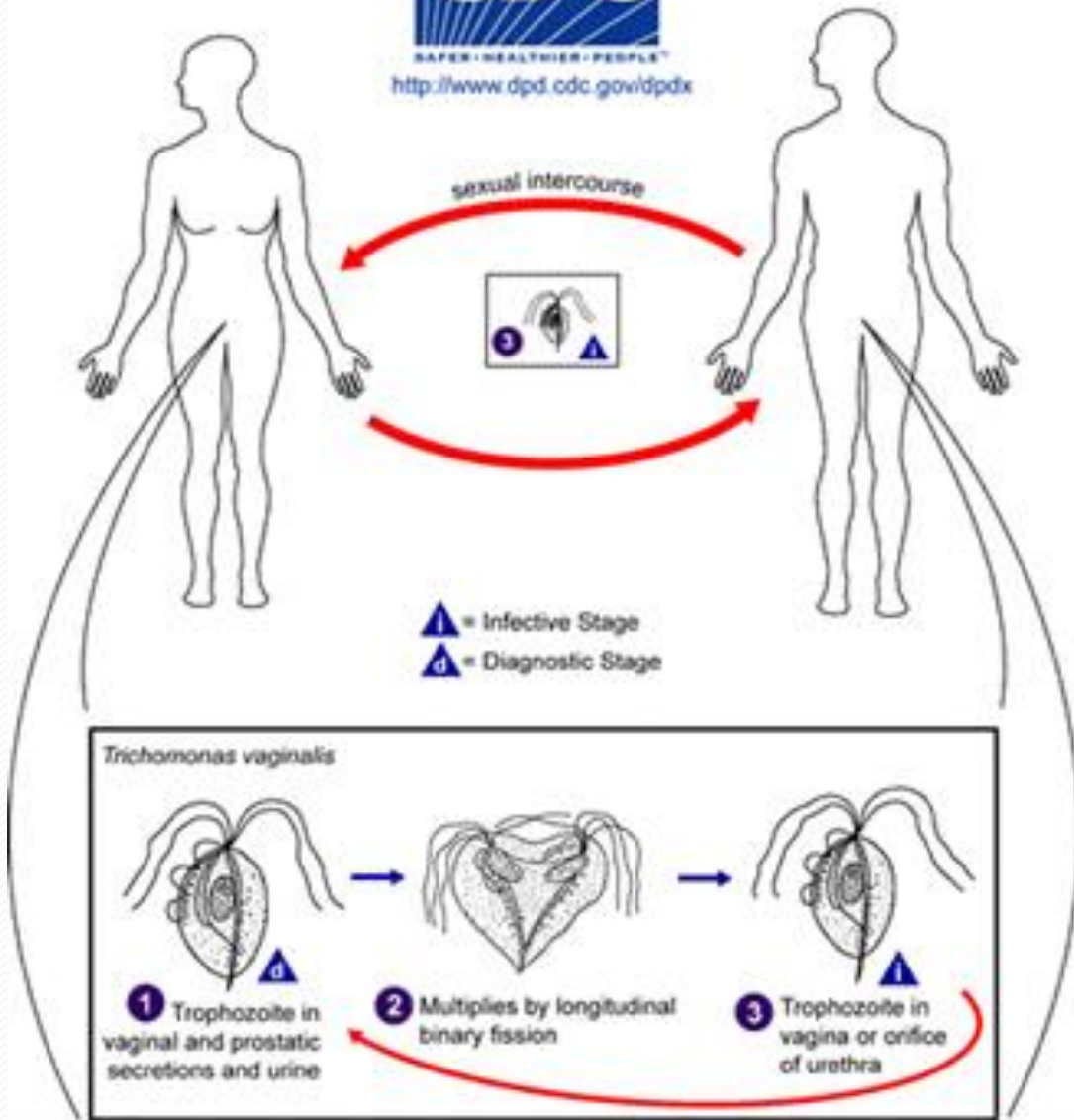
- **Life cycle**

- *Trichomonas vaginalis* trophozoites reside on the mucosal surface of the vagina in infected women. The growing trophozoites multiply by longitudinal binary fission and feed on local bacteria and leukocytes. The *Trichomonas vaginalis* trophozoites thrive in a slightly alkaline or slightly acid PH environment, such as that commonly seen in an unhealthy vagina. The most common infection site of *T. vaginalis* in males is the prostate gland region and the epithelium of the urethra. The detailed life cycle in the male host is unknown.

**Infective and diagnostic stage is trophozoites**



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<http://www.dpd.cdc.gov/dpdx>



- **3. *Trichomonas tenax***
- **Trophozoite:** Oval to pear in Shape. Have one nuclei, vesicular filled with chromatin granules. Have five flagella, all originating anteriorly, four extends anteriorly, one extends posteriorly. **Undulating membrane extending 2/3** of body length. Thick axostyle and Small anterior cytosome opposite undulating membrane. There is a known cyst
- **Life cycle**
- *Trichomonas tenax* trophozoites survive in the body as mouth scavengers that feed primarily on local microorganisms. Located in the tartar between the teeth, tonsillar crypts pyorrheal pockets, and gingival margin around the gums, *T. tenax* trophozoites multiply by longitudinal binary fission. These trophozoites are unable to survive the digestive process.



- **Clinical symptoms**

- The typical *Trichomonas tenax* infection does not produce any notable symptoms. On a rare occasion, *T. tenax* has been known to invade the respiratory tract, but this appears to have mainly occurred in patients with underlying thoracic or lung abscesses or pleural exudates.

# Control and Prevention

- **control** of *Trichomonas vaginalis* = Condom use remains the best and most reliable protection against STIs. However, due to religious or cultural reasons, condom use may be limited, particularly in some developing countries. Concurrent treatment of sexual partners is recommended to prevent reinfection. However, systemic administration of chemotherapeutics to prevent infection results in increased incidences of nitroimidazole-refractory strains
- **Treatment** of *Trichomonas vaginalis* = Metronidazole



