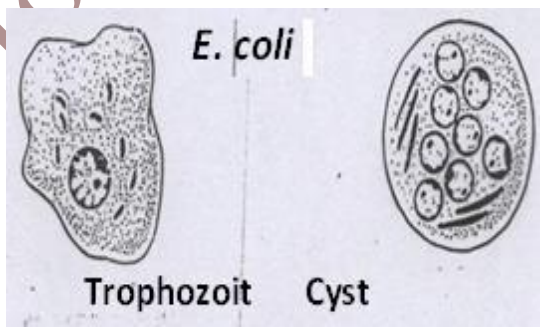
Nonpathogenic amoeba:

1- *Entamoeba coli*
2- *Entamoeba gingivalis*
3- *Endolimax nana*
4- *Iodamoeba butschlii*

These amoebae (except *E.gingivalis*) are found only in the intestines they do not harm the body. They enter the human body when a person swallows food or water that has been exposed to contaminated stool.

These amoebae can remain in a person's intestine for weeks, months or years. Studies have shown that these amoebae do not make people sick. Even people who have a weakened immune system are not affected by these amoebas.

1- *Entamoeba coli*



- The most common nonpathogenic amoebic parasite of man (commensal).
- It habits large intestine.
- It has trophozoite & cyst stages, both of them are larger than those of *E. istolytica*.

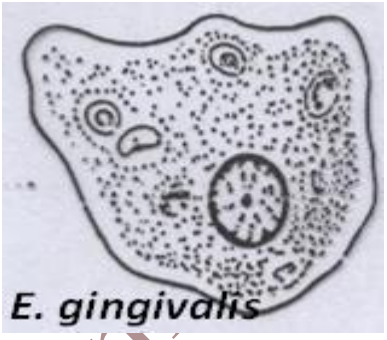
- The **trophozoite** size is (15- 50) µ, no RBCs seen in food vacuoles. There is no sharp point between ectoplasm & endoplasm in trophozoite stage.

- In **cyst stage** (its size 10-33 µm), the mature cyst contains 8 nuclei, each of them has same feature of trophozoite nuclei.

The **shape of chromatoidal bodies** in of *E. histolytica* is cigarette, rounded in shape, **but** it is needle shaped in the *E. coli* if presented.

- The presence of *E. coli* in stool of some bodies means the food of this patient contaminated with feacal material, how? By the Musca domestica, filth fly, or others.

2- *Entamoeba gingivalis*

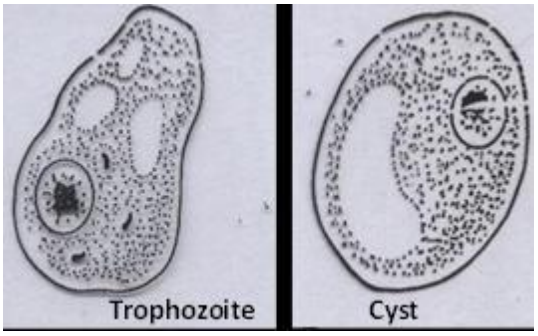


- Only trophozoite been reported in E. gingivalis .
- The size of the trophozoite is (15-30) µm.
- It is nonpathogenic but opportunistic (in diseased gum or tonsils).
- The karyosome is central or somewhat eccentric.
- It is found in diseased gum & tonsillitis as a phagocytic (opportunistic).
- It is **transmitted** through saliva droplets or intimate contact.
- **Diagnosis**:by demonstration of trophozoites in materials removed from gingival margin or from between the teeth or cavities of decayed teeth. The presence of this amoeba in the mouth suggests the need for better oral hygiene.

3- *Endolimax nana*

- Like the ***E. coli***, its presence means the food of the person been contaminated with stool (feacal matter) of other person
- It has trophozoite & cyst stages. The trophozoite has one nucleus, and the cyst has 4 nuclei. The karyosome consisting from one or more granules, commonly eccentric in position.
- The size of the trophozoite is (8-10) mm, the endoplasm finally granular with numerous vacuoles.
- In the cyst chromotoidal bodies, if present are short curved rods or comma shaped.

4- *Iodamoeba butschlii*



- Cosmopolitan, commensal, living in lumen of large intestine
- It has **2 stages**:
- **Trophozoit:** (8-10) m. evidence of pseudopodial extensions.
- **Cyst:** (5-18) m.

- **We can differentiate between *I. buetschlii* & others by:**
  1- The trophozoite & cyst have one nucleus & both of them have glycogen vacuoles, so in stain with iodine to give brown mass.
  2- A large karyosome in nucleus found centrally or somewhat eccentrically.
  3- Only the trophozoite of this amoeba has one or two distinct glycogen vacuoles.
  4- The cyst has only one nucleus, it has large glycogen vacuoles which stained with iodine in deep brown color.

So these differences are very important in diagnosis .

Differential diagnosis of amoebic and bacillary dysentery:

Amoebiasis	Shigellosis
- Chronic disease may persist from 1 –14 weeks or even years.	- Acute disease with short incubation period
- Flask – shaped ulcer involving all coats of intestine.	- Superficial infection with necrosis of mucous membrane
- Stool consisting of blood, mucus and fecal materials but with few leukocyts.	- Stool filled with cellular Exudates, numerous pus cells.
- RBCs may be agglutinated	- RBCs not agglutinate
- Charcot – leyden crystals usually present.	- Not present.
- E. histolytica troph. may have ingested RBCs	- No E. histolytica troph.
- Localized abdominal pain over cecum	. - Generalized abdominal pain.
- No fever	- Fever usually present.
- Response to antiamoebic drug	- Response to antibiotic.

Class ciliata(mastigophora):

- ***Balantidium coli***

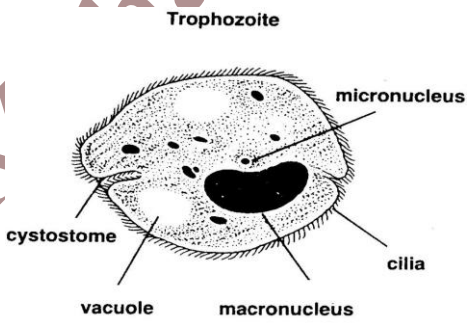
Balantidium is the largest protozoan and only ciliate known to parasitize humans Primarily a zoonotic intestinal parasite, animals that represent a source of infection include Horses, cows, pigs

The most risky people are farm workers , Symptoms similar to amoebiasis except, No extraintestinal infection

Disease : Balantidiasis

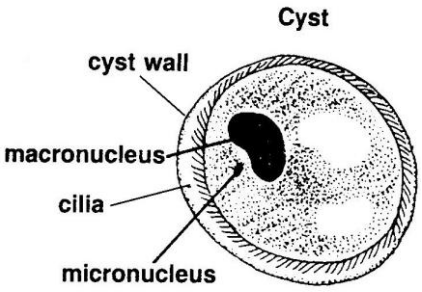
Habitat: Parasite live in Large intestine specially cecal region.

Trophozoite of *B.coli*



- 50-150 mic
- Ciliated parasite
- Oval shape
- Greenish yellow color
- Kidney or bean shape Macronucleus
- Small micronucleus
- Retractile food vacuole

cyst of *B.coli*



- 45-55 mic
- Spherical shape
- Cyst wall is thick consist of 1-2 layers
- No phagosome
- Macronucleus
- Conractile vacules
- No cilia

Life cycle & Pathogenicity

Infection is happened by consumption of material contaminated with feces of some farm animals cotaining cyst (the infective stage).

Exystation happened in the small intestine releasing trophozoites that migrate to the large intestine.

Trophozoites reside in the lumen of large intestine Invade mucosa and submucosa Feed on mucosal cells, RBC, leukocyte where they divide by transverse binary fission Encystation is triggered by dehydration of intestinal content and cysts passed with stool.

Diagnosis:

1- History: if there any animal contact
2- Symptoms Clinical signs could confused by *E.histolytica* infection
3- Laboratory tests: finding the typical trophozoites and cysts in the stool

Laboratory methods to detect (cyst or trophozoite) in stool by

- Direct wet mount preparation method
- Stained smear by iodine
- Looking for characteristic kidney shape nucleus and retractile food vacuole.

Prevention & control:

Avoid ingestion of food and drinks contaminated by animal feces.

Treatment

1- Tetracycline
2- Iodoquinol.
3- Metronidazole.