

Al-Mustaqbal University college
Department of pharmacy



2 st Class, 2 st Semester

parasitology

Lab 1

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- **Parasitology:** Its science which is studied the parasitic phenomena.
- **Parasite:** It's an organism depend on other organism (different species) to get food and shelter and produce harmful effect .
- **Parasitism:** A relationship between different living organism , the first host and the second parasite
- **Host:** an organism which harbors the parasite.



- **Classes of parasites**

- **A- according to place of infection:**

- **1- Ecto-parasite (ectozoa):** lives outside on the surface of the body of the host.

- **2-Endo-parasite (entozoa):** lives inside the body of the host: in the blood, tissues, body cavities, digestive tract and other organs.

- **B- according to living:**

- **1-Facultative parasite:** lives a parasitic life when opportunity arises.

- **2-Obligatory parasite:** cannot exist without the parasitic life.



C- according to period of infection

A- Temporary parasite: visits its host for a short period.

B- Permanent parasite: leads a parasitic life throughout the whole period of its life.

- **Classes of host:**

1-final or definitive host: is the host in which the parasite spends its adult stages or where the parasite utilizes the sexual method of reproduction.

2-Intermediate host: is the host in which the parasite spends its larval stages or where the parasite utilizes asexual method of reproduction

3- carrier or transport host: it is the host where the larvae are collected without growing, and no symptoms of disease.

- the parasite remains viable without further development.

4- reservoir host: it is the final host which acting as source of injury.

• Classification of parasites

divided into three main groups:

A –Protozoa single-celled organism, multiply in human host, All protozoans have 2 important stages of life:
Trophozoite and Cyst

1- phylum: Sarcodina

الحميات

2- Phylum: mastigophora

السوطيات

3- Phylum: Ciliophora

الهدبيات

4- Phylum: Sporozoa

البوغيات

B-Helminthes

(worms) multicellular worms, do not normally multiply in human host

**1- Phylum:
platyhelminthes**

الديدان المسطحة

2- Phylum:

Nematoda

الديدان الخيطيه

3- Phylum:

Acanthocephala

الديدان شوكية الراس

C-Arthropoda

multicellular worms, do not normally multiply in human host

**1- Phylum:
insecta**

الحشرات

2- Phylum:

Archneida العناكب

1- phylum: Sarcodina

- This phylum include
- Entamoeba histolytica
- Entamoeba gingivalis
- Entamoeba coli
- Entamoeba nana
- Entamoeba butschlii
- Dientamoeba fragilis

Entamoeba histolytica: live in the tissue and lumen of the intestine. Cause Amoebiasis (Amoebic dysentery).

Taxonomical Classification;

Kingdom ; Animalia

Subkingdom ; Protozoa

Phylum ; Sarcodina

Class ; Lobosea

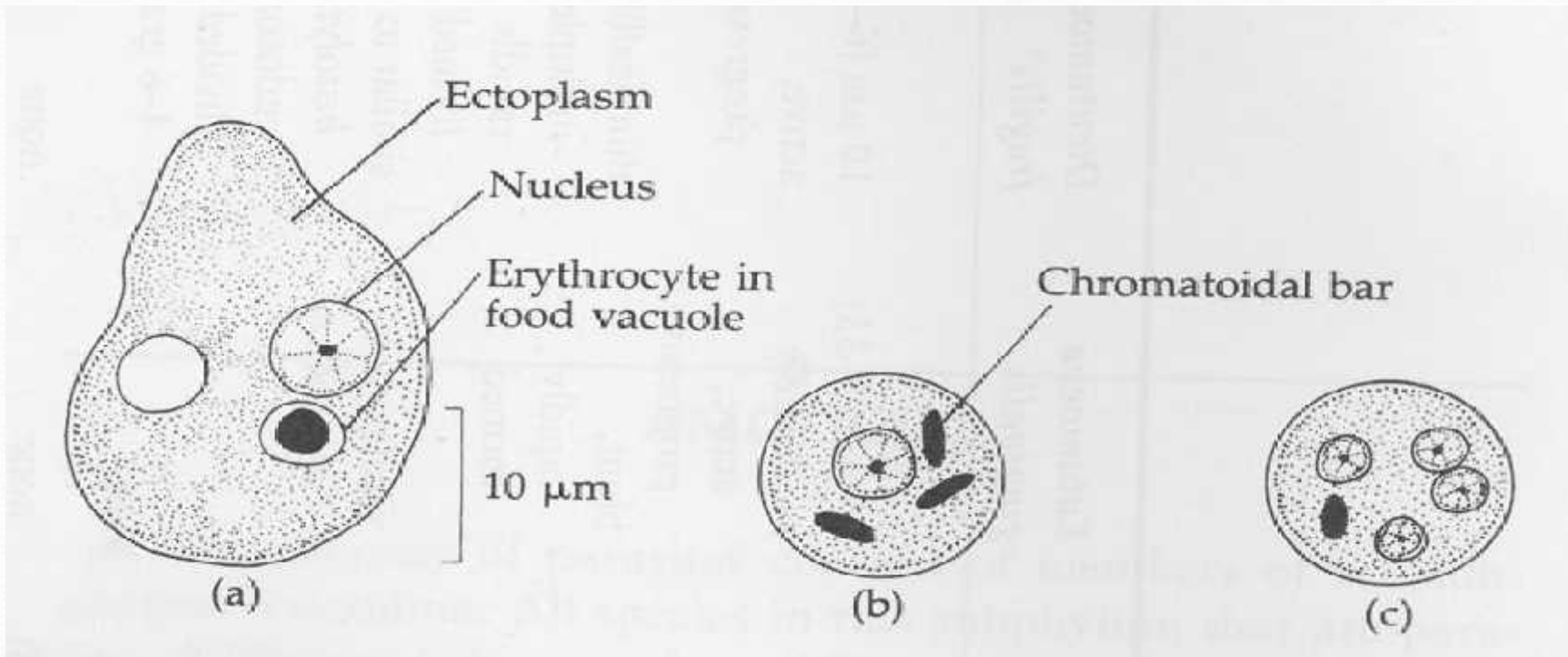
Order ; Amoebida

Genus : Entamoeba

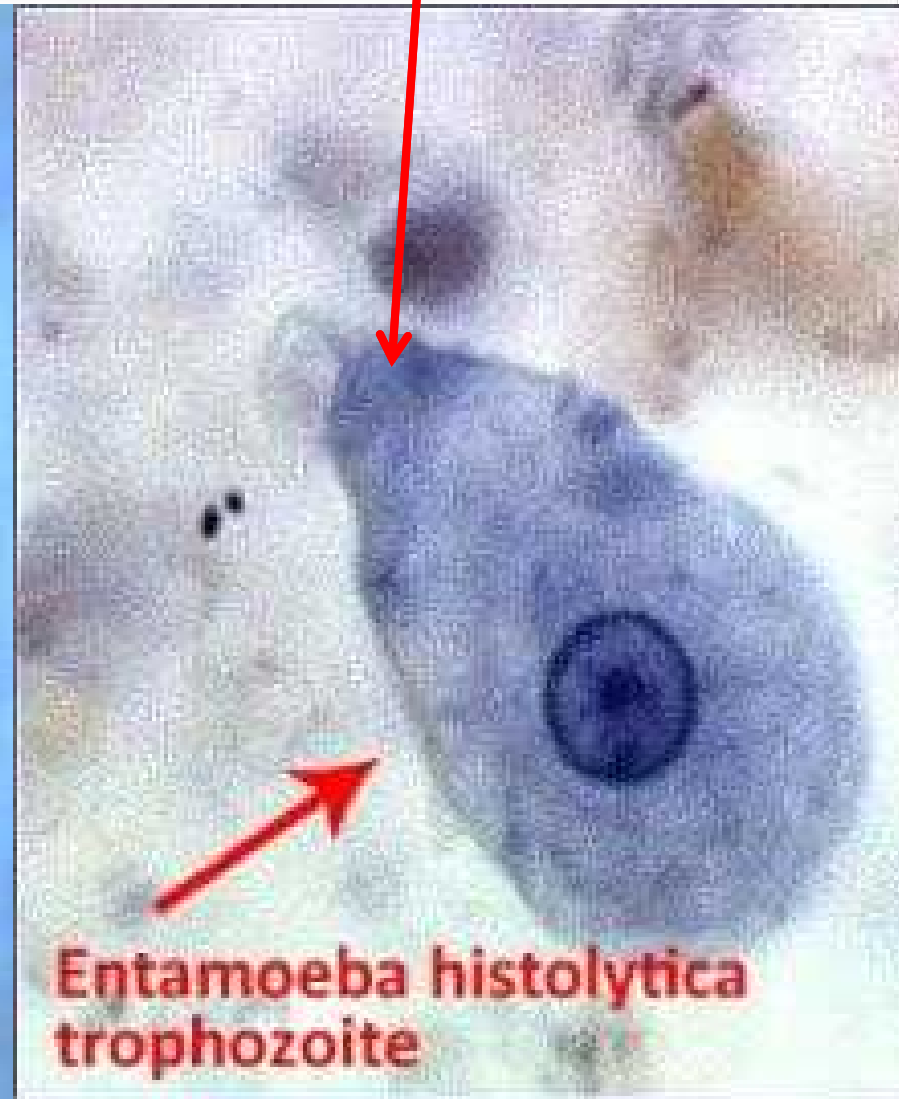
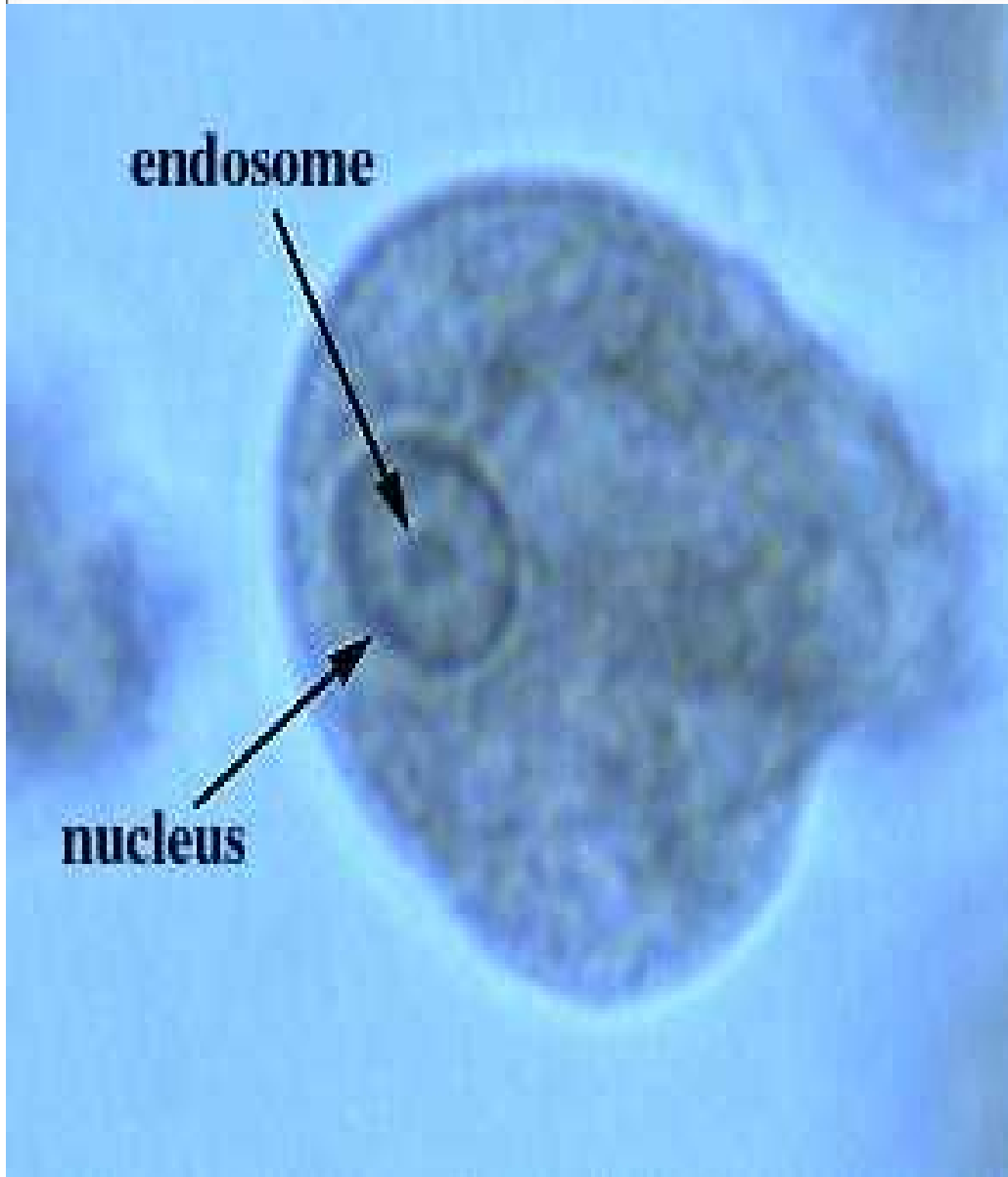
***Species* : histolytica**

Morphology

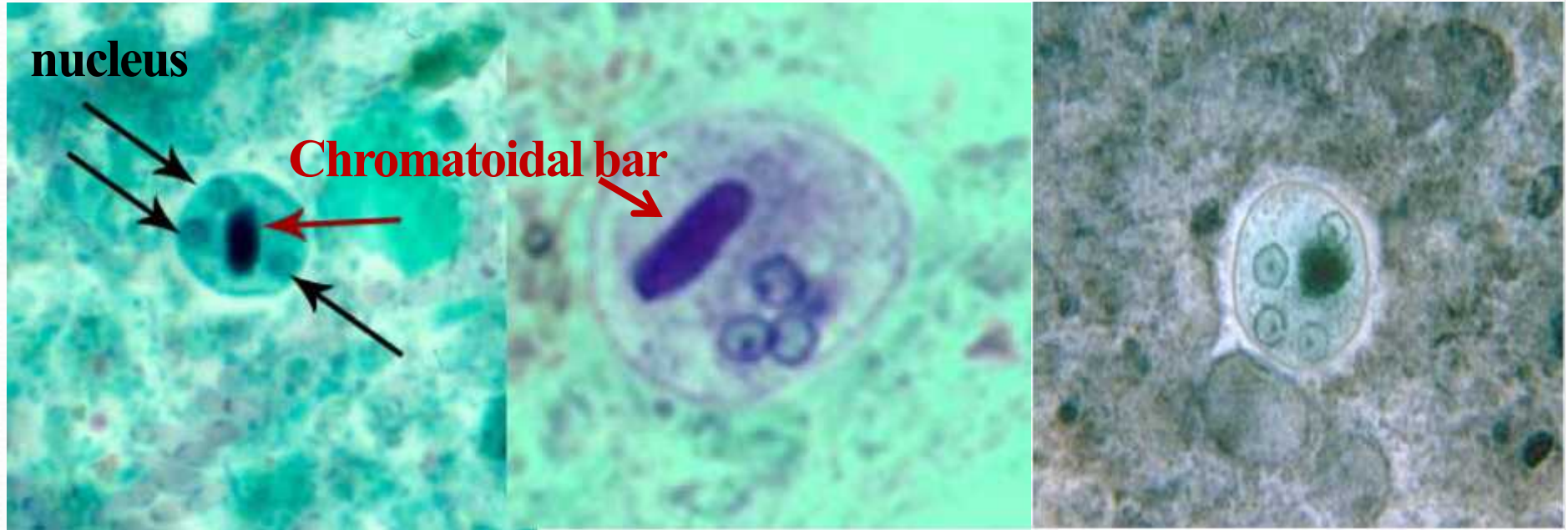
- Different form of E. histolytica;
 - **a- trophozoite**: The organism has single nucleus with clear small central karyosome, have food vacuole with red blood cell, bacteria and epithelial cell.
 - **b- precyst**
 - **c- cyst** (1, 2, 4 nuclei): spherical, with central karyosome and peripheral chromatin, the pseudopoda disappeared



Entamoeba histolytica trophozoite pseudopoda



Entamoeba histolytica mature cyst



Transmission

- 1- direct contact of person to person(fecal-oral)
- 2- Venereal transmission among homosexual males
- 3- Food or drink contaminated with feces containing the E.his. cyst
- 4- Use of human feces for soil fertilizer
- 5- contamination of foodstuffs by flies, and possibly cockroaches

Pathogenesis

Depends on:

- Parasite virulence.
- Host resistance.
- Condition of the intestinal tract.

Pathogenic agent: trophozoites invade intestinal mucosa.

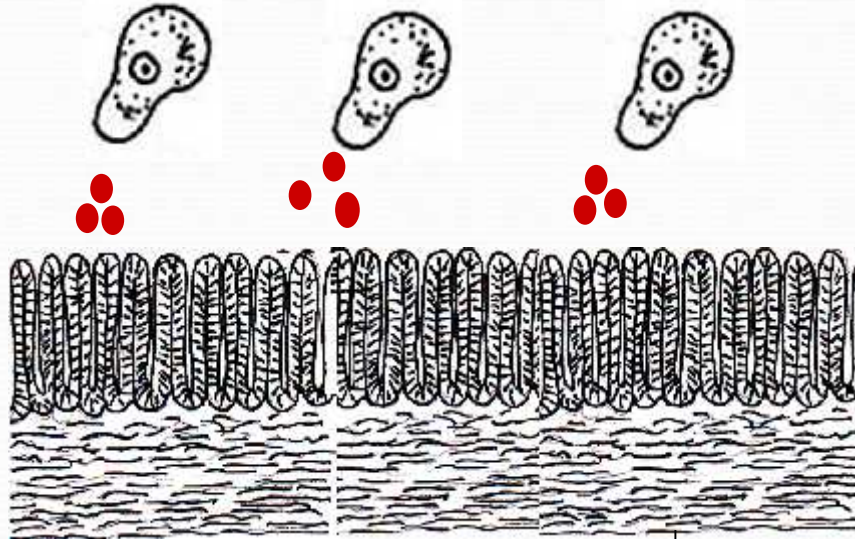
Trophozoites produce **histolytic enzyme** that produce **necrosis of mucosa** leading to the formation of **flask-shaped ulcer**.

flask-shaped ulcer



This is followed by:

- Proliferation of connective tissue.
- Intensive ulcerations.
- Extra-intestinal invasion to brain, liver, lung or skin.



Blood vessel

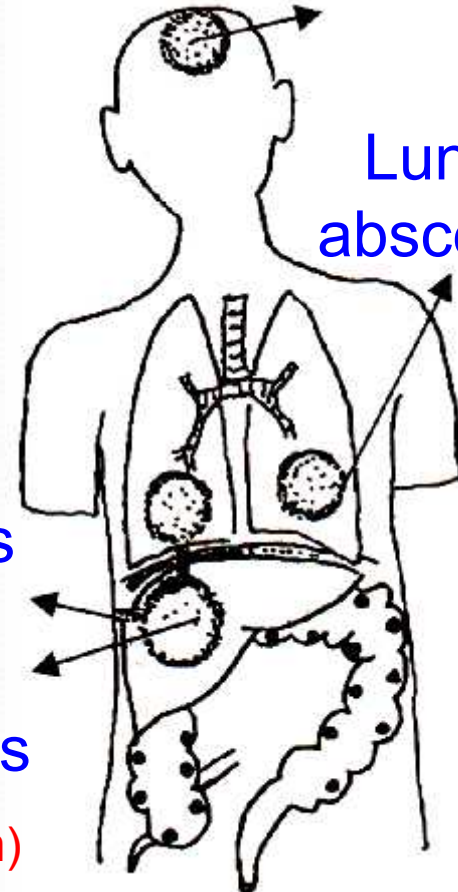
Skin abscess

Liver abscess

(common)

Brain abscess

Lung abscess



Diagnosis (Intestinal amoebiasis)

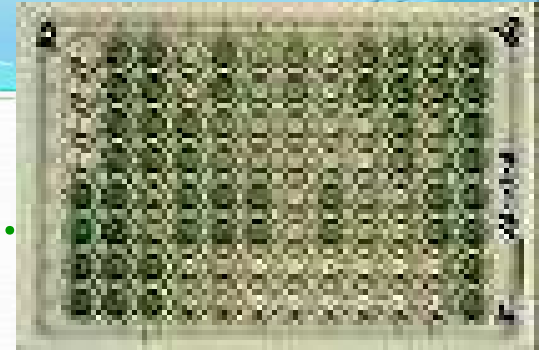
- Clinically: Dysentery: painful frequent evacuation of small quantities of stool containing mucus tinged with blood.
- Laboratory:
 - 1- Direct stool examination
 - 2- Concentration techniques for cysts.



3- Indirect diagnosis:

Serological tests **in chronic amoebiasis.**

Detection of copro-antigen using **monoclonal antibodies.**



Coating the well with **MAb** and add patient's stool to detect ***Entamoeba Ag***

Treatment

- Metronidazole, Tinidazole. **Tissue amoebicide**

Very effective in killing amoebas in the wall of the intestine, in blood and in liver abscesses.

- Diloxanide furoate. **Luminal amoebicide**

kills trophozoites and cysts in the lumen of the intestine.