

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**

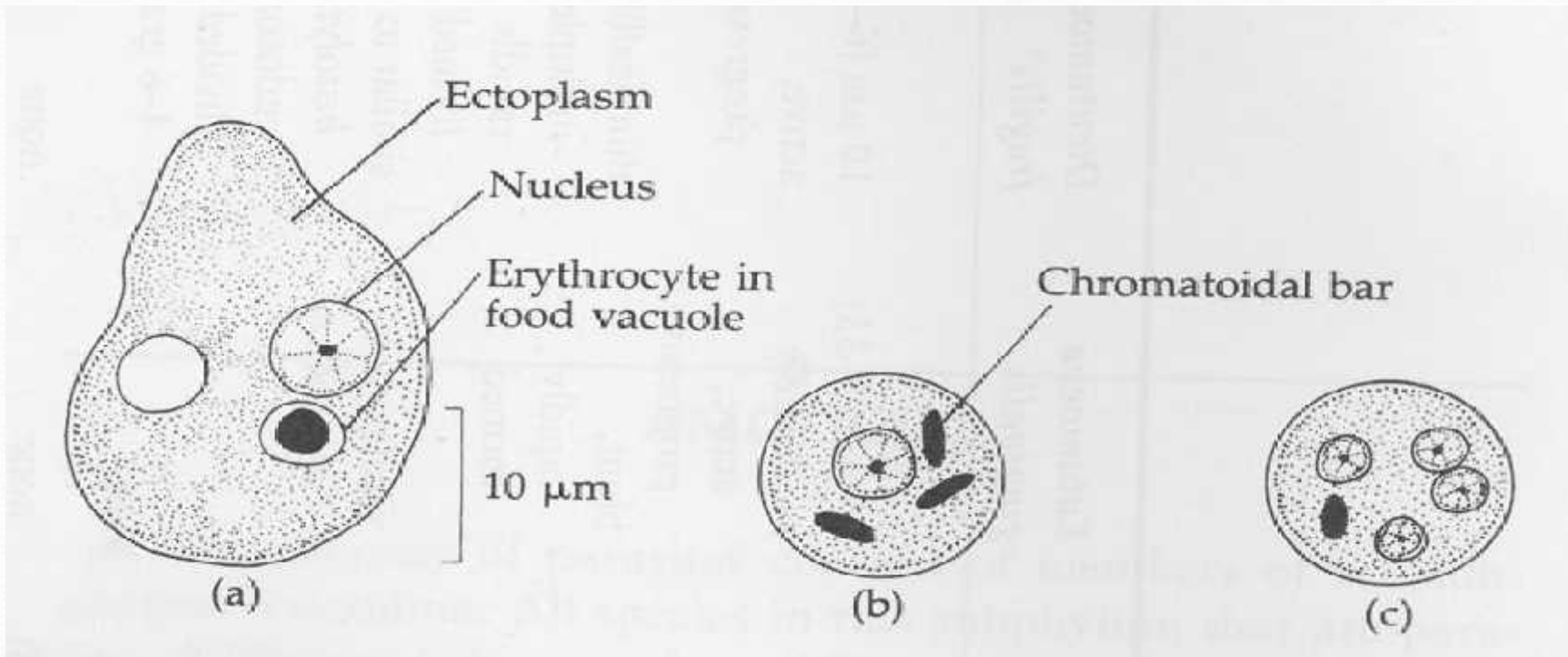
**Genus : Entamoeba**

***Species* : histolytica**

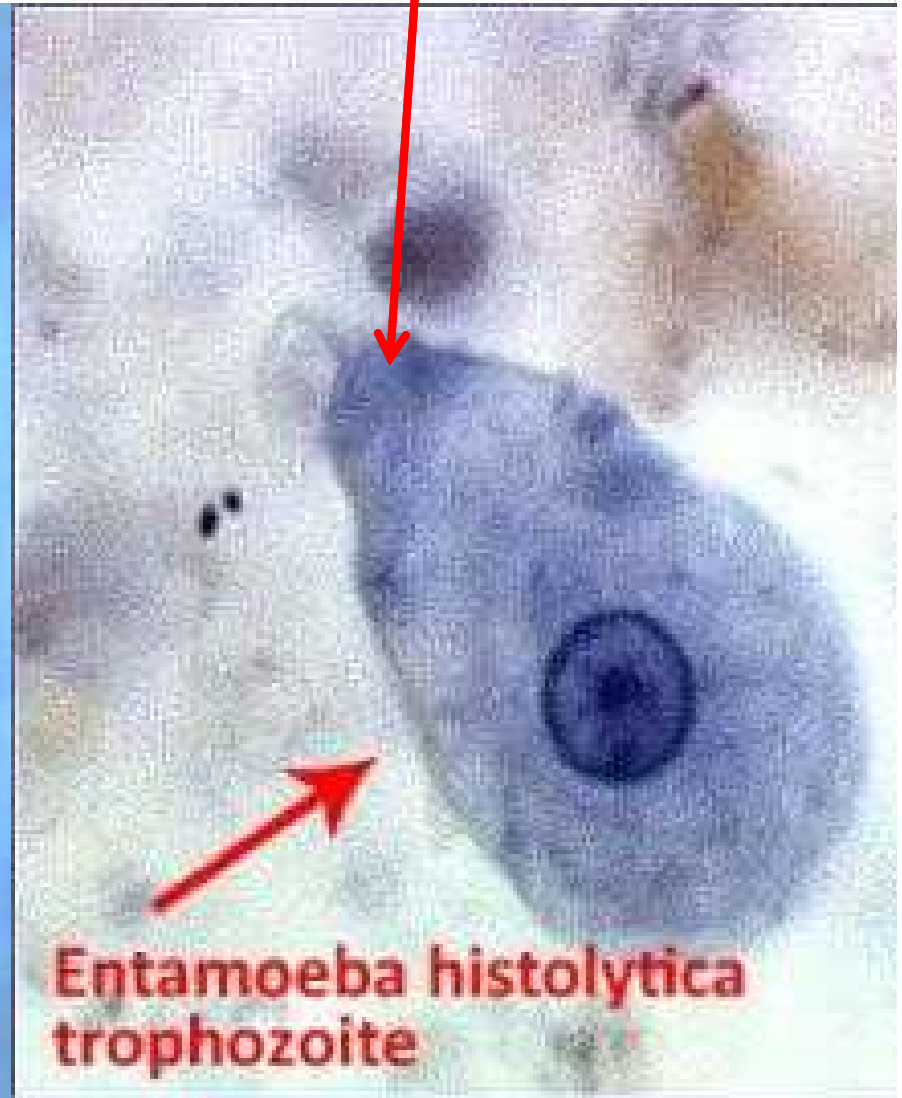
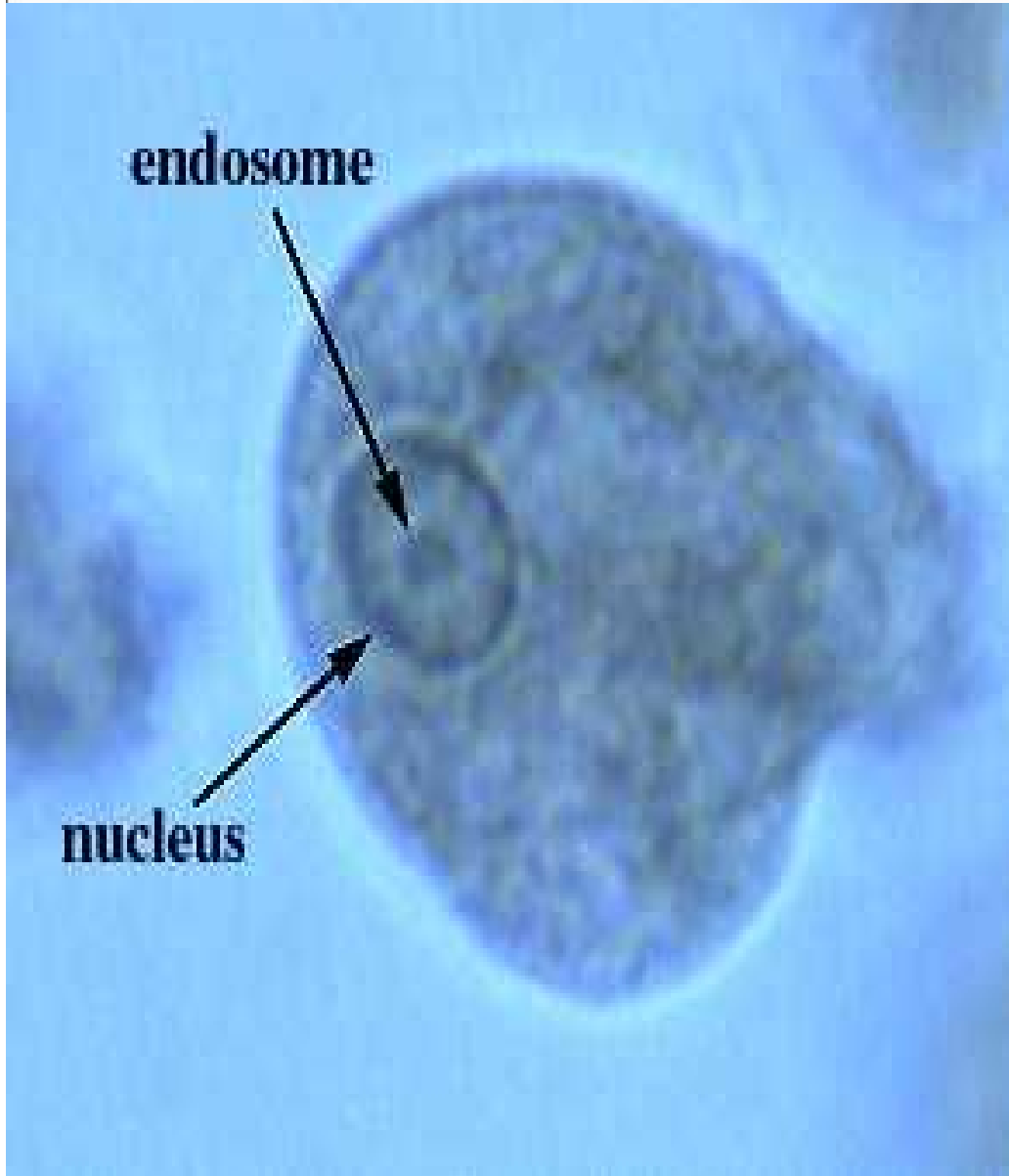


# Morphology

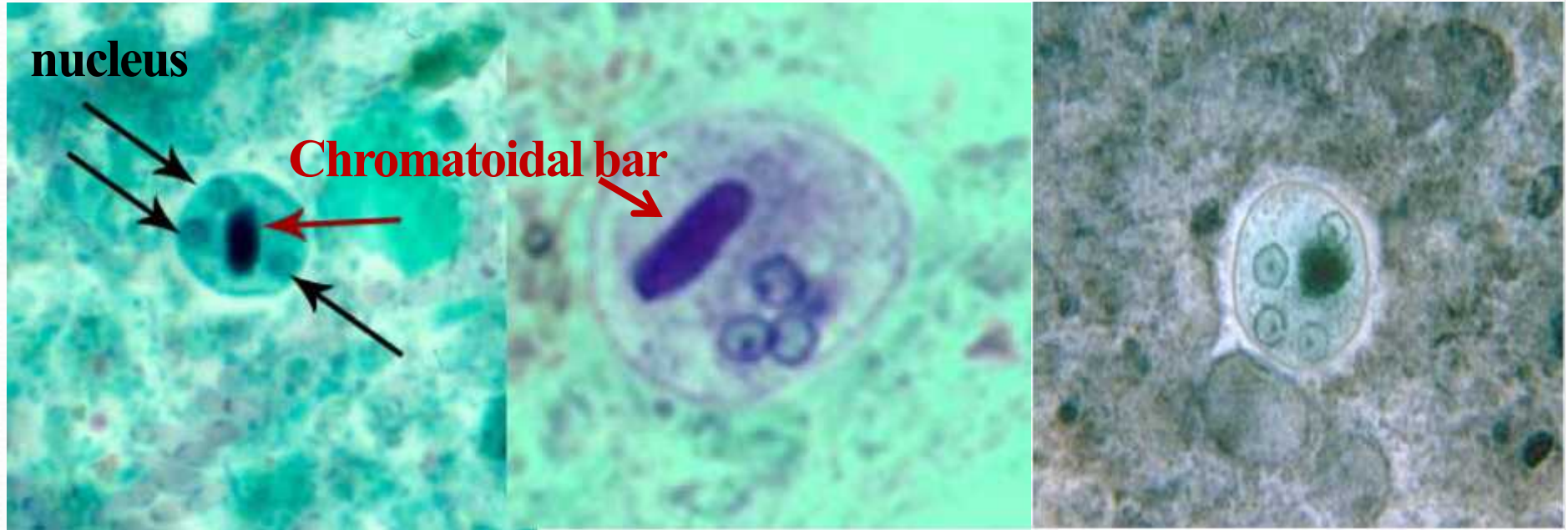
- Different form of E. histolytica;
  - **a- trophozoite**: The organism has single nucleus with clear small central karyosome, have food vacuole with red blood cell, bacteria and epithelial cell.
  - **b- precyst**
  - **c- cyst** (1, 2, 4 nuclei): spherical, with central karyosome and peripheral chromatin,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

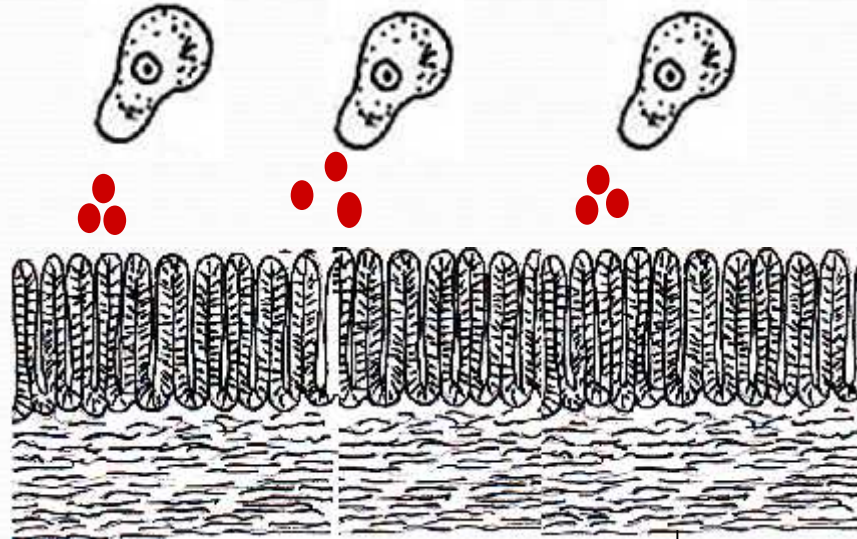
Trophozoites produce **histolytic enzyme** that produce **necrosis of mucosa** leading to the formation of **flask-shaped ulcer**.

# flask-shaped ulcer



## This is followed by:

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



Blood vessel

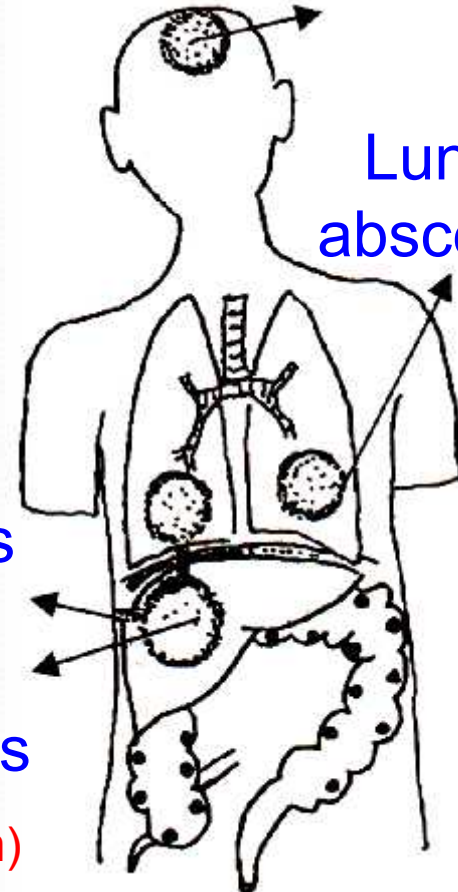
Skin abscess

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.

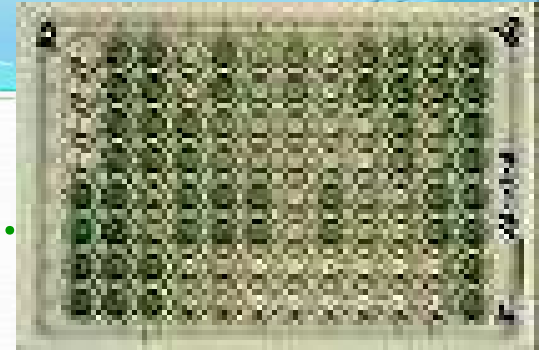




### 3- Indirect diagnosis:

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.