



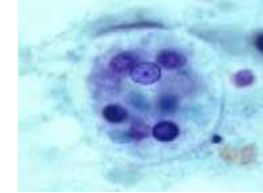
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Department of Laboratory Techniques



Medical Parasitology



Lab. 3



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Entamoeba

Can be divided into two types according to pathogenicity :

Pathogenic amoeba :

- ***Entamoeba histolytica***

Non Pathogenic amoeba :

- ***Entamoeba dispar***
- ***Entamoeba moshkovskii***
- ***Entamoeba polecki***
- ***Entamoeba coli***
- ***Entamoeba hartmanni***

Entamoeba histolytica



Classification

Kingdom : Protista or Animalia

Subkingdom : Protozoa

Phylum : Sarcomastigophora

Subphylum : Sarcodina

Class : Lobosea

Order : Amobida

Genus : *Entamoeba*

Species : *E. histolytica*

Introduction

- is a common protozoan parasite found in the large intestine of human.
- It is the third leading parasite cause of death in the developing countries.
- the parasite is primarily a human parasite and transmitted from human to human. dogs, cats, and primates may be infected.

What disease does *Entamoeba histolytica* cause??..

❖ The parasite is responsible for **amoebiasis** (old name : **amoebic dysentery**).

Morphology of *Entamoeba histolytica* :

The parasite passes in three stages :

- Trophozoite
- Precyst
- Cyst

The most important of these phases are the trophozoite and the cyst stages because they are more effective

Trophozoite



Morphology

- ✓ It is the growing and feeding stage of parasite.
- ✓ Shape : not fixed because of constantly changing position.
- ✓ Size : ranging from 18-40 μm ; average being 20-30 μm .
- ✓ Trophozoites are actively motile with the help of pseudopodia.
- ✓ Trophozoites are anaerobic parasite, (present in large intestine).

✓ **Cytoplasm :**

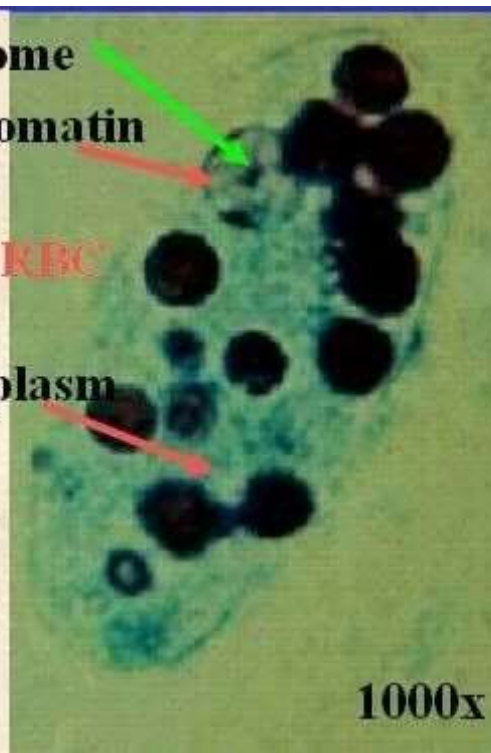
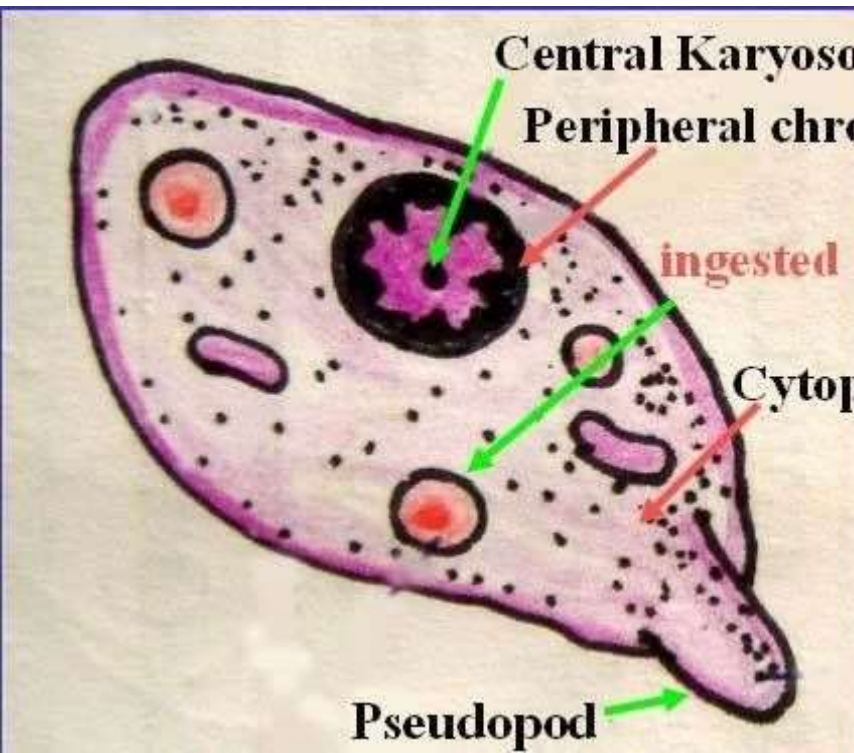
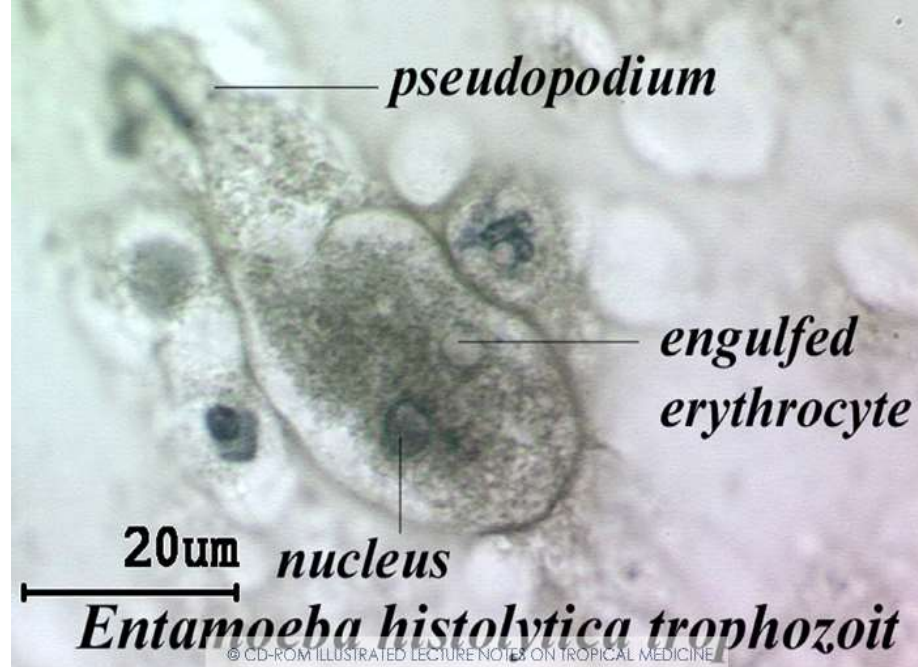
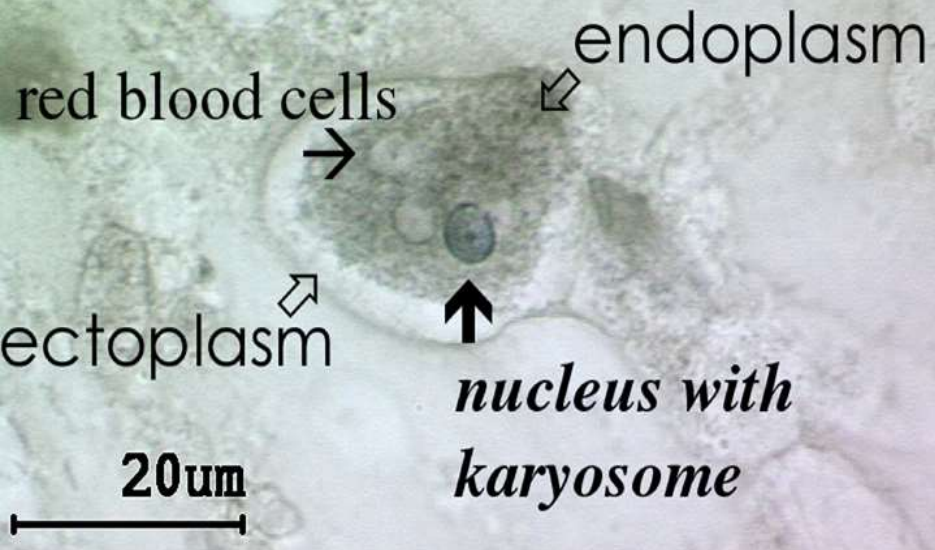
cytoplasm is divided into two portion :

- **a clear transparent ectoplasm**
- **a granular endoplasm. It is filled with lysosomes , pinocyte and phagocyte vacuoles containing Red blood cells are in different stages of digestion, and glycogens granules are distributed in large quantities between ribosome.**

✓ **Nucleus :**

• **It is single, spherical shape and size ranging from (4- 6 μ)**
Nucleus contains central karyosome and fine peripheral chromatin.

Entamoeba histolytica trophozoit

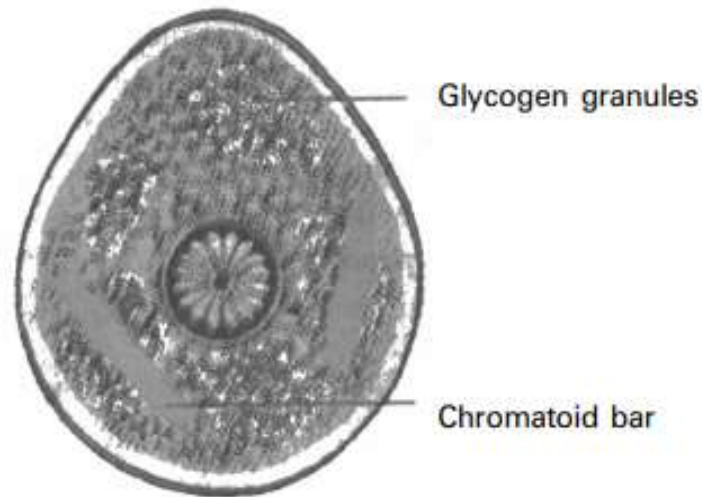


E. histolytica -Trophozoite



Precyst :

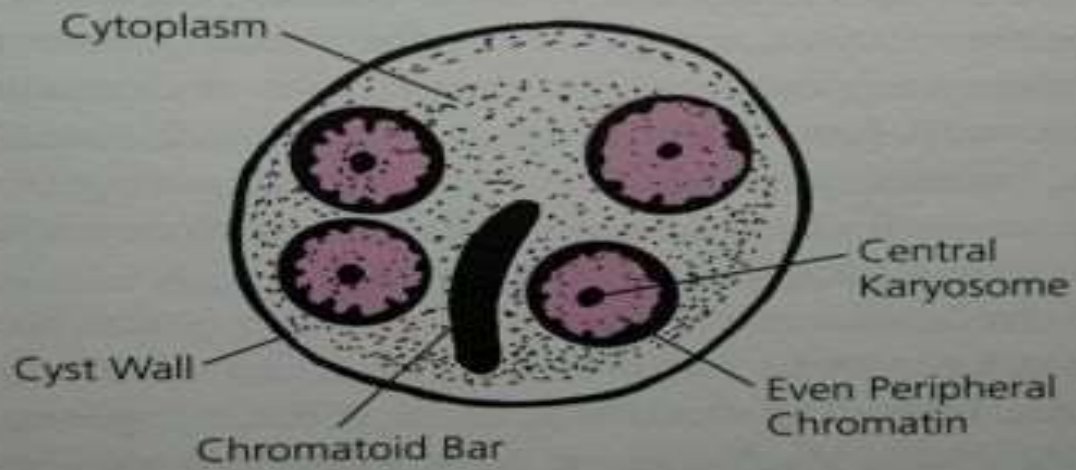
- **It is the intermediate stage between trophozoite and cyst**
- **It is smaller in size; 10-20 μ**
- **It is round or slightly ovoid with blunt**
- **pseudopodium projecting from periphery**
- **No RBC or food materials are found on its endoplasm.**



Pre-cystic stage

Cyst :

- It is the infective form of parasite.
- Shape:** It is round or oval in shape.
- Size:** 12-15 μm in diameter.
- It is surrounded by a highly refractile membrane called cyst wall.
- The cyst wall is resistant to digestion by gastric juice in human stomach.
- Nucleus :** A mature cyst is quadrinucleated.
- Cytoplasm:** Cytoplasm shows chromatid bars and glycogen masses but no RBCs or food particles.
- Mature cyst passed out in stool from infected patient and remained without further development in soil for few days.



Size Range 8 – 22 μm
Average Size: 12 – 18 μm



Laboratory Diagnosis

- *Entamoeba histolytica* must be differentiated from other intestinal protozoa including pathogen and non-pathogen.
- Differentiation is possible, but not always easy, based on morphologic characteristics of the cysts and trophozoites.
 - Amebiasis is most commonly diagnosed by examining stool samples under a microscope in a laboratory.
 - Sometimes, several stool samples from several different days must be collected and tested because the number of *E. histolytica* parasites found in the stool changes from day to day.

1. Microscopy method :

*** Microscopic identification**

- This can be accomplished using :

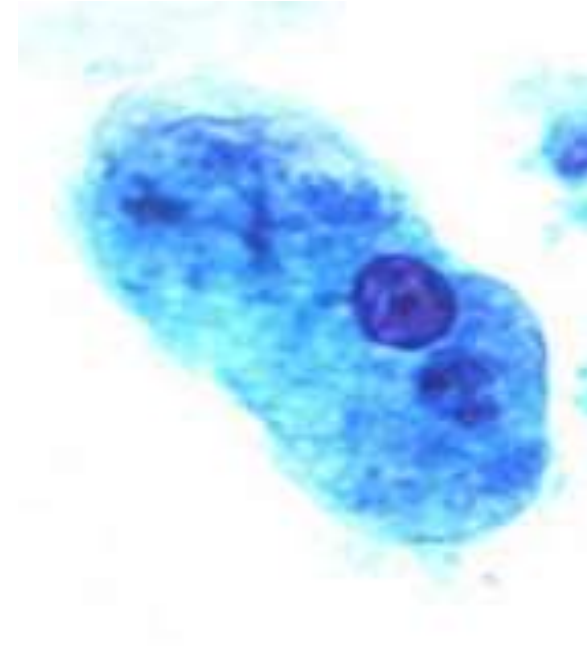
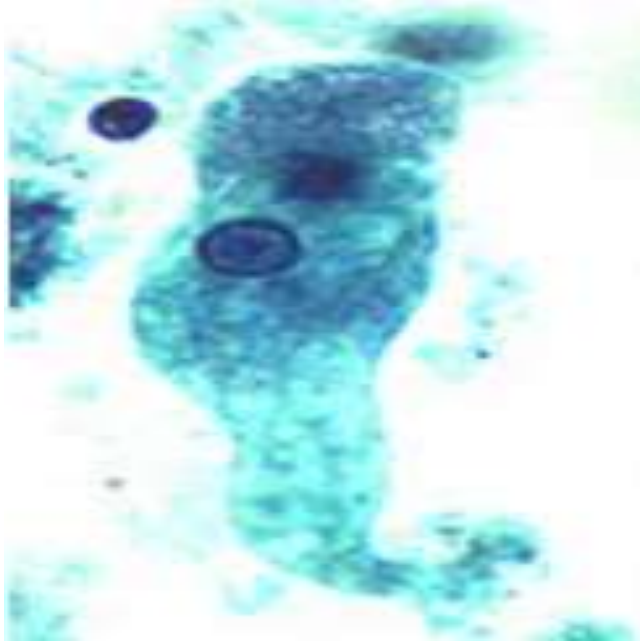
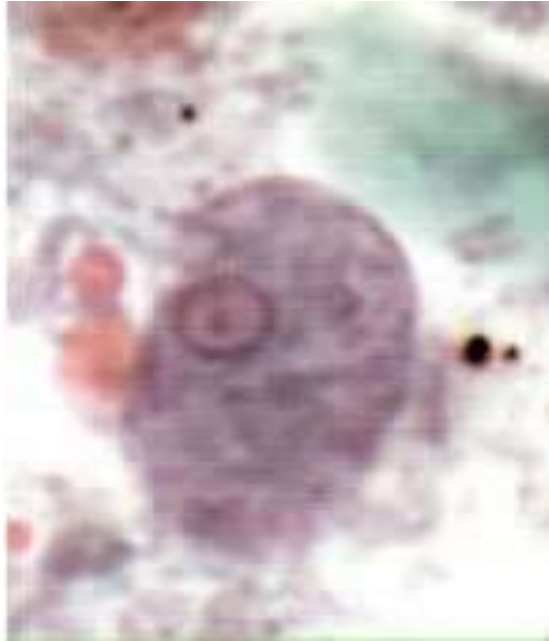
1. Fresh stool (Stool smear) :

wet mounts and permanently stained preparations (e.g., trichrome).

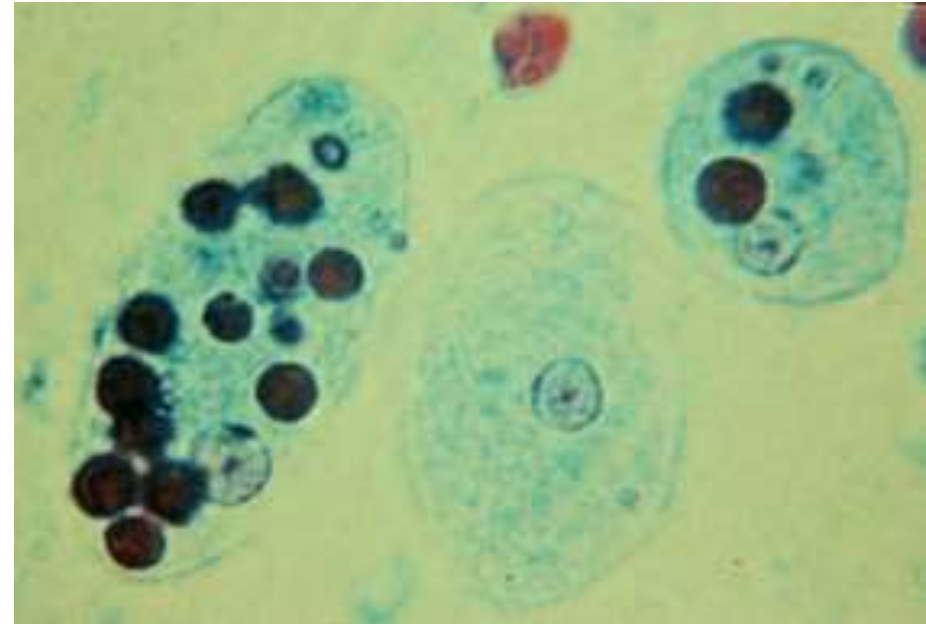
2. Concentrates :

from fresh stool: wet mounts, with or without iodine stain, and permanently stained preparations (e.g., trichrome).

Trophozoites of *Entamoeba histolytica* (trichrome stain)

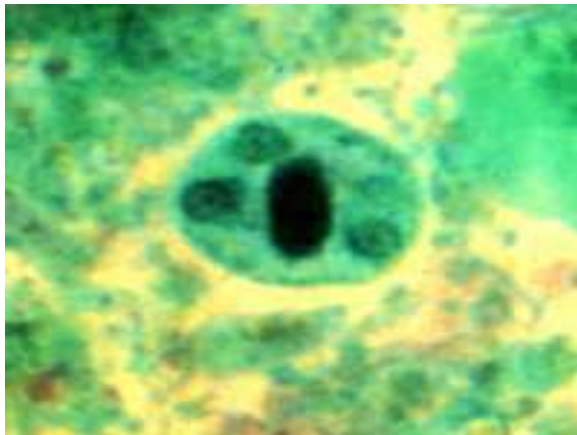
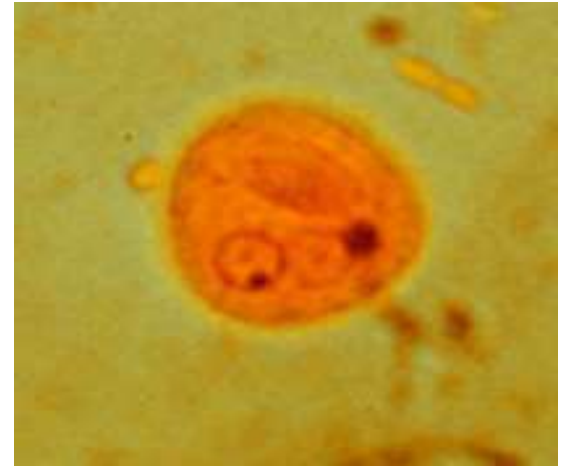
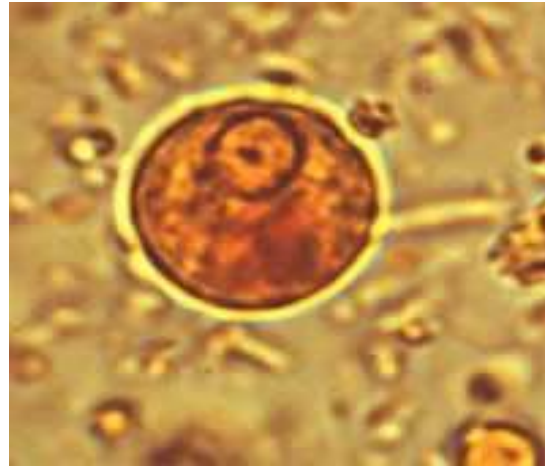


**Trophozoites of *Entamoeba histolytica* with
ingested erythrocytes (trichrome stain)**



Cysts of *Entamoeba histolytica*

Cysts of *Entamoeba histolytica*, permanent preparations stained with trichrome.



2. Immunodiagnosis :

- 1. Antibody detection**
- 2. Antigen detection may be useful as an adjunct to microscopic diagnosis**
- 3. The indirect hemagglutination (IHA)**
- 4. The EIA test detects antibody specific for *E. histolytica*.**

3. Molecular diagnosis

- In reference diagnosis laboratories, PCR is the method of choice for discriminating the pathogenic species (*E. histolytica*).