Al-Mustansyria University
College Of Pharmacy
Medical Microbiology
The second stage - 2 course
Protozoa (Amebae)
Lab. 2

By

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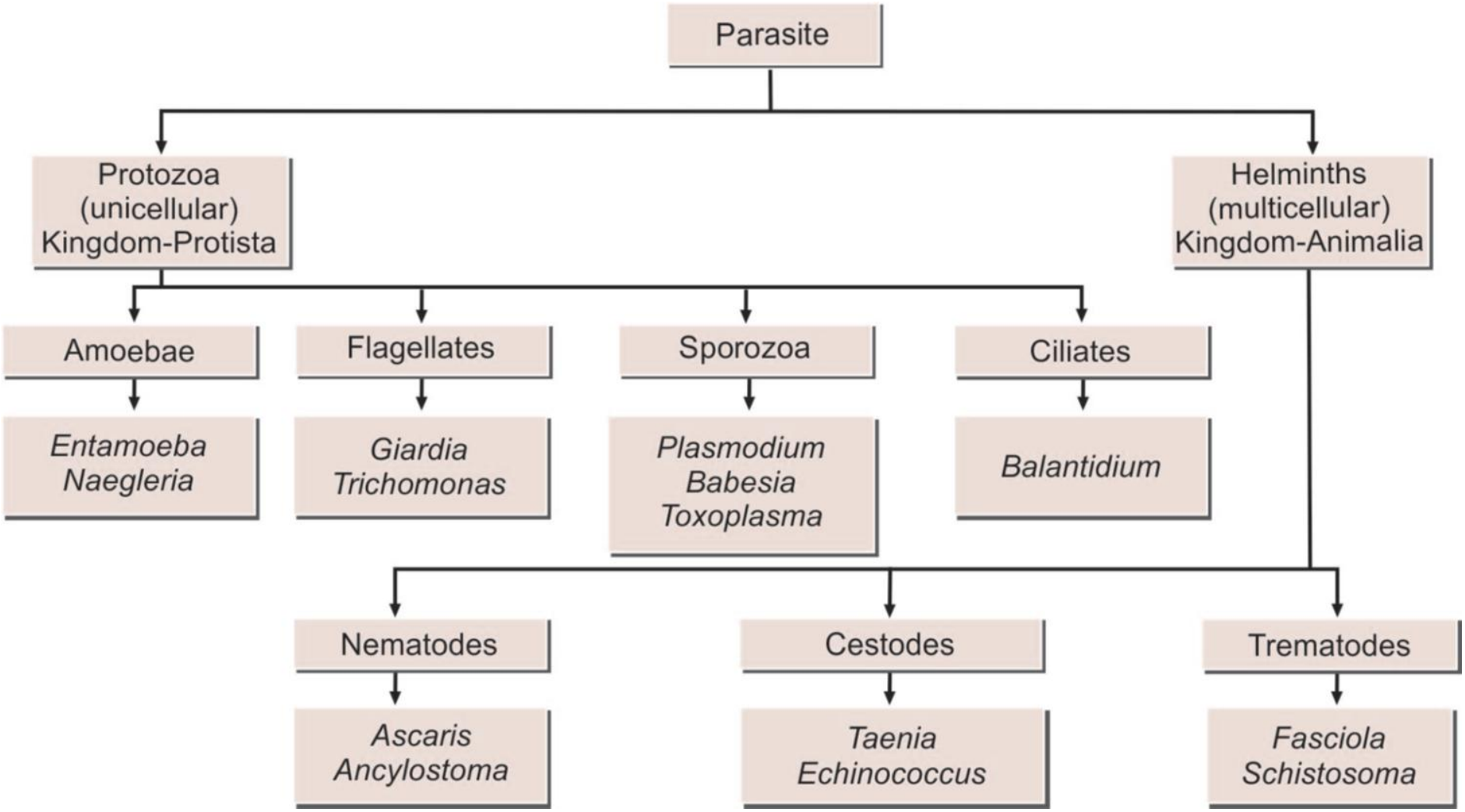
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Parasite
Protozoa (unicellular) Kingdom-Protista
Helminths (multicellular) Kingdom-Animalia
Amoebae
Flagellates
Sporozoa
Ciliates
Entamoeba Naegleria
Giardia Trichomonas
Plasmodium Babesia Toxoplasma
Balantidium
Nematodes
Cestodes
Trematodes
Ascaris Ancylostoma
Taenia Echinococcus
Fasciola Schistosoma

Introduction

- Protozoa are unicellular organisms, have all the essential organelles that help them in their essential activities, all of them are microscopic, most of them lives singly but many others are living in a colonies.

- The main groups of parasitic protozoa are Amebae, the Flagellates and Ciliates.

I Amebae

- The member of amebae group move by means of cytoplasmic extensions that are projected and retracted in response to external stimuli, it is called pseudopodia (the single pseudopodium).

- All amebae have a trophozoite stage in which there is multiplication by binary fission as long a environmental conditions are favorable.

- Many species also have an encysted stage that is more resistant to unfavorable conditions and that provides an opportunity for transfer from one host to the next.

Amebiasis
Amebic Dysentery

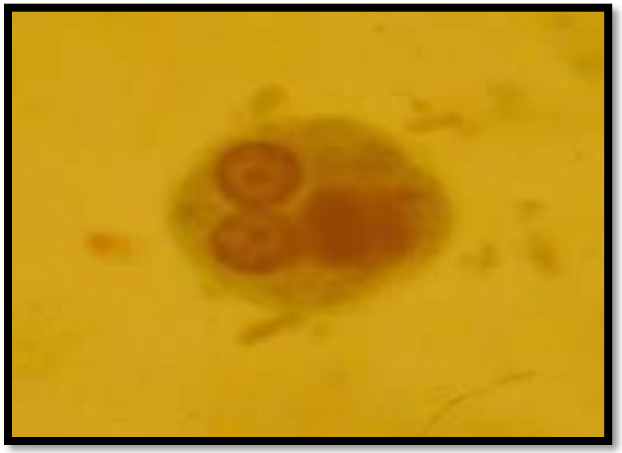
Causal agent: ***Entamoeba histolytica*** is well recognized as a pathogenic amoeba.

Morphology

trophozoite

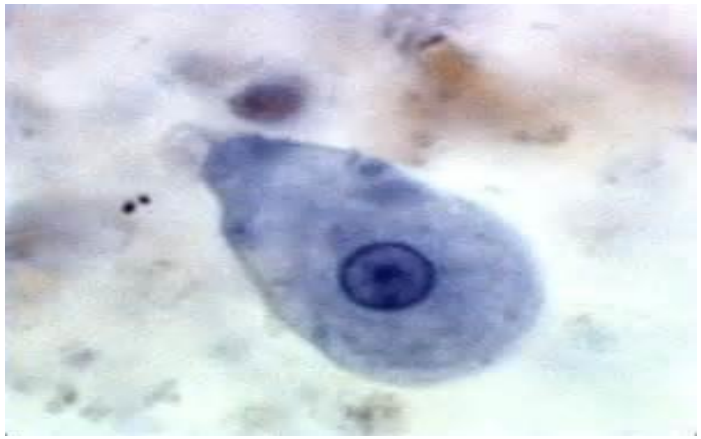


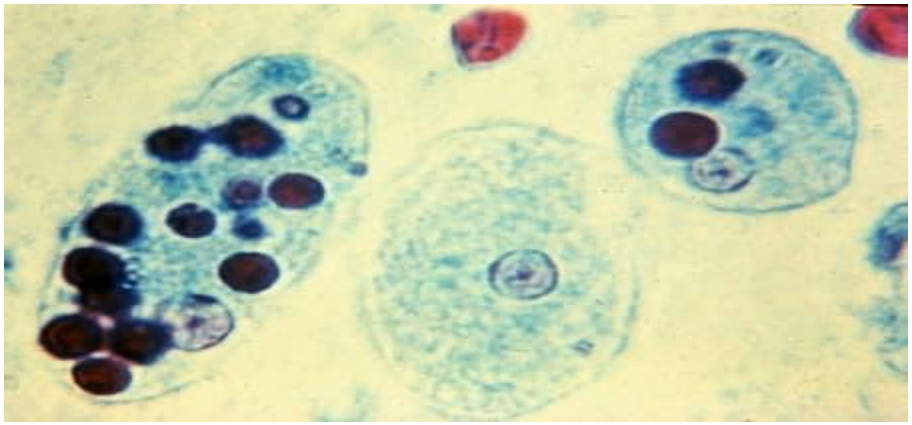
cyst(1, 2, 4 nuclei)

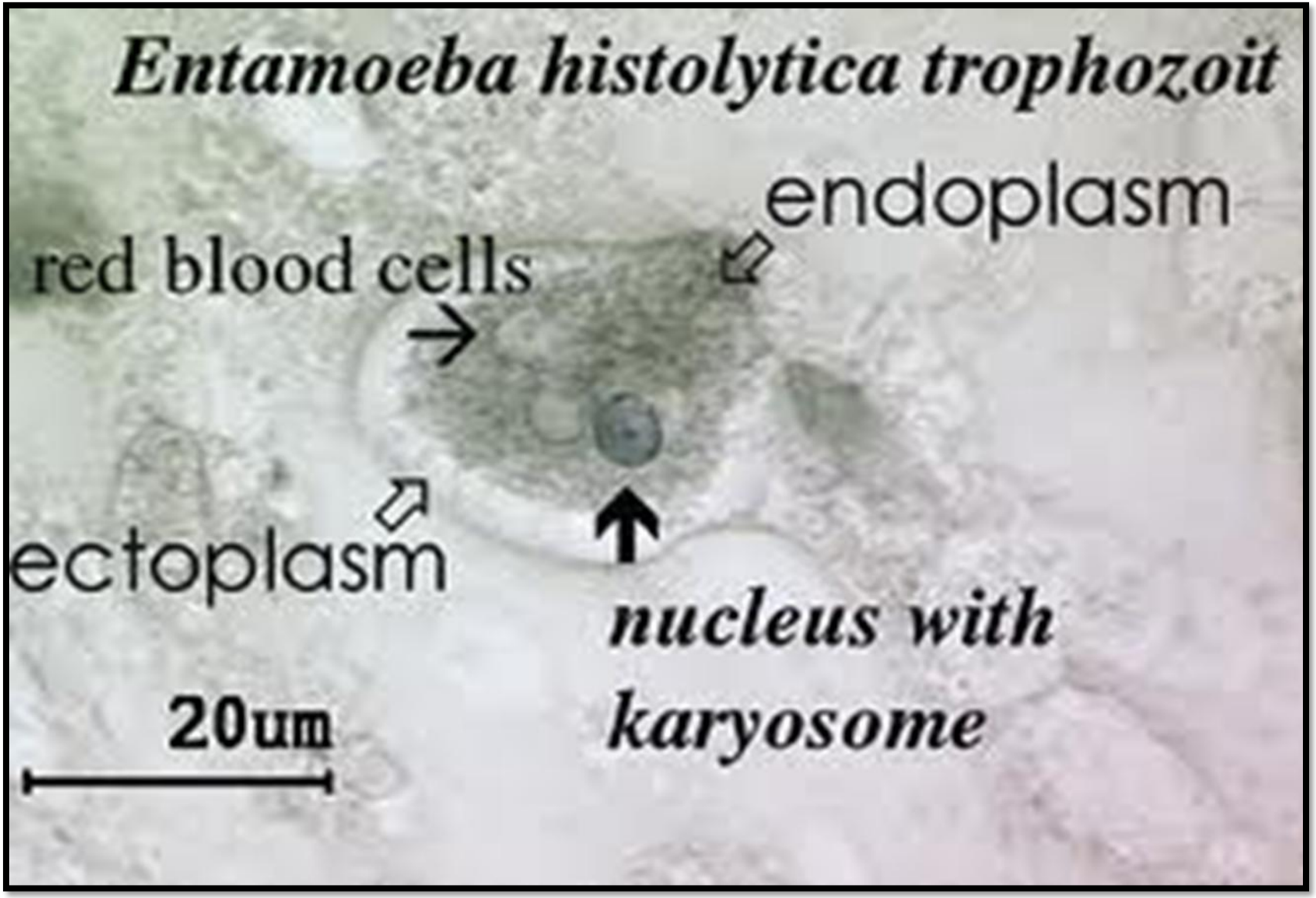


➢ Trophozoite character :

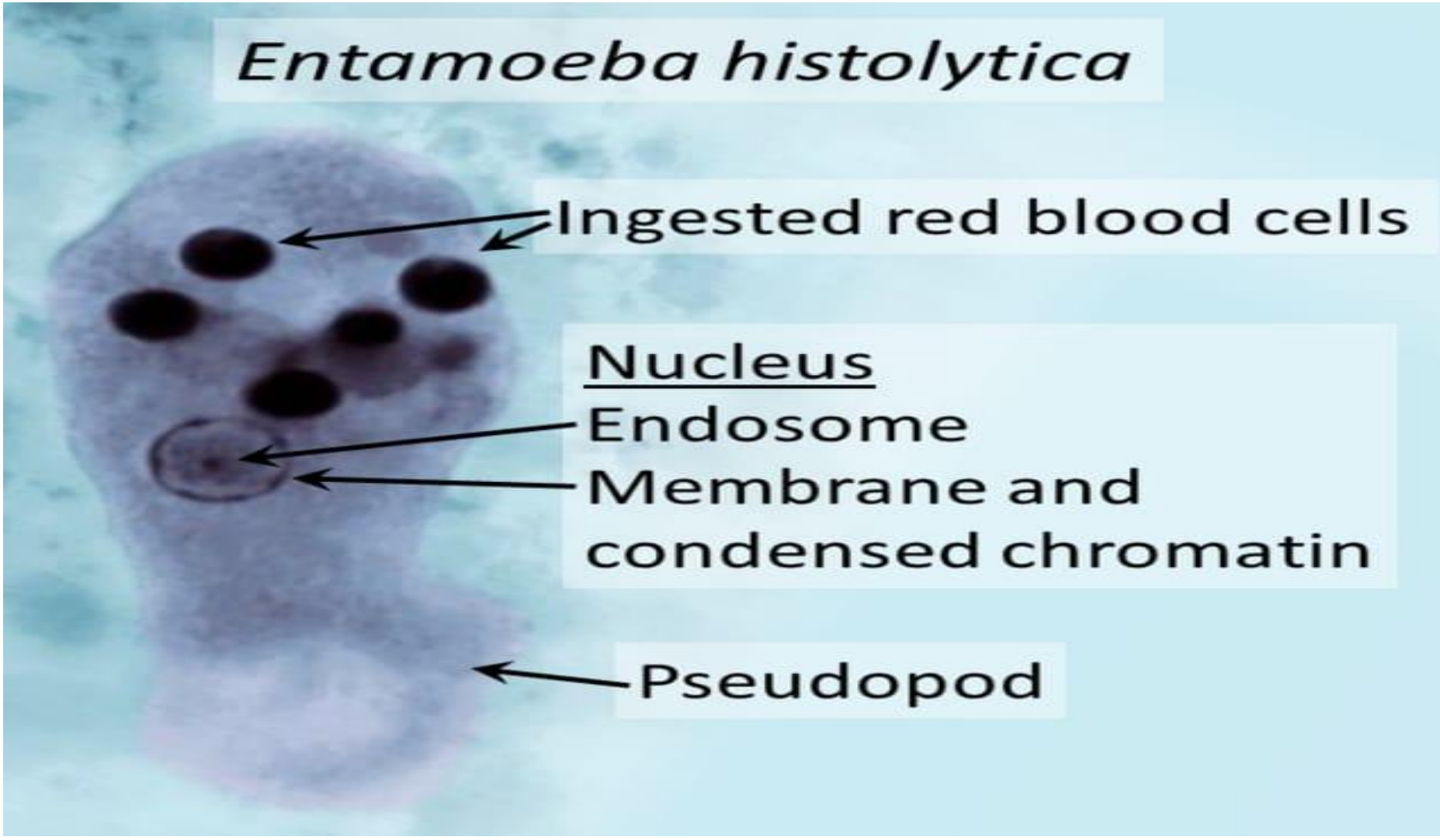
- ❑ The trophozoite lives in the last part of the small intestine and in the large intestine .
- ❑ it varies from (12-30μ) in diameter
- ❑ The nucleus rounded, viscular, surrounded by a delicate nuclear membrane which is studded on its inner surface with minute regular chromatin granules. In the center of the nucleus there is a single dense bead-like chromatin body called the karyosome or endosome (centric karyosome).
- ❑ 4-There are many food vacuoles containing parts of epithelial cells, Bacteria & some times many R.B.Cs





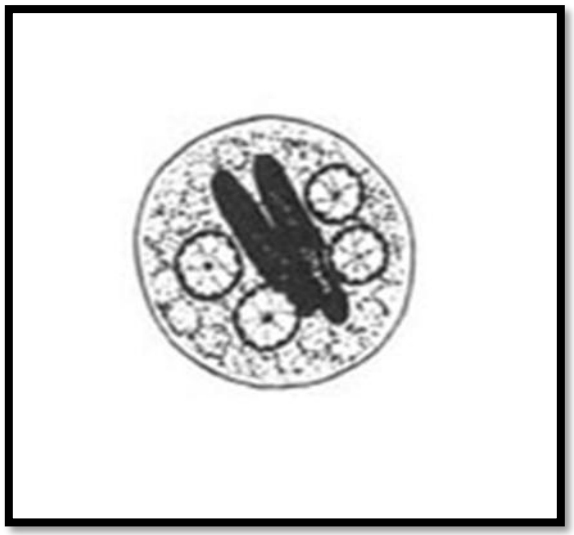

Entamoeba histolytica trophozoit
endoplasm
red blood cells
ectoplasm
nucleus with
karyosome
20um

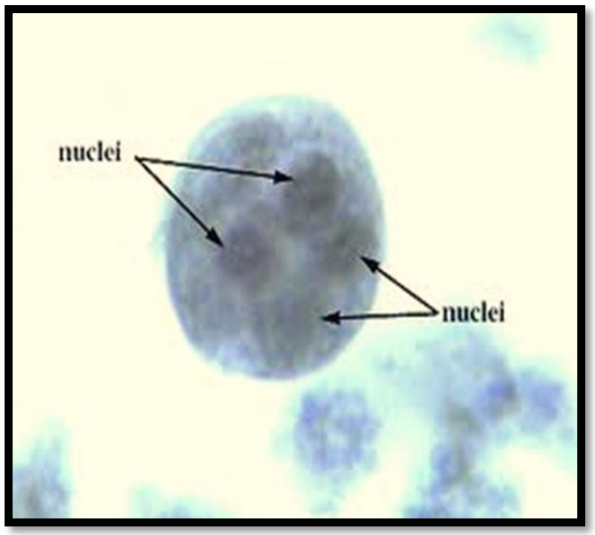
Entamoeba histolytica trophozoite

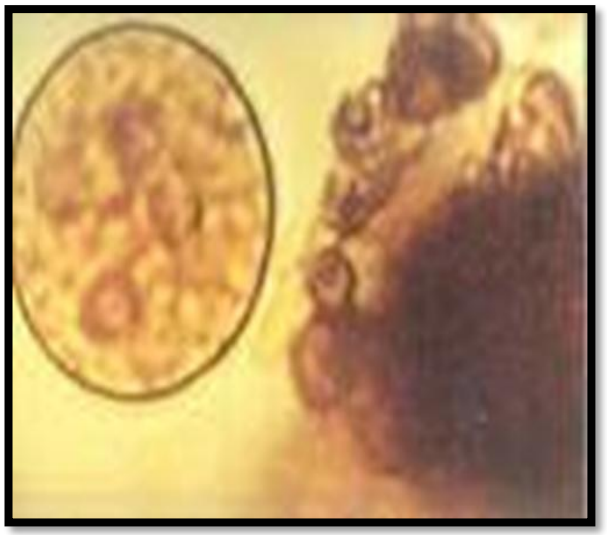


➢Cyst

- The mature cyst typically has (4) nuclei. The cyst arrange between (5-10µ) in diameter, spherical or may has oval shape.







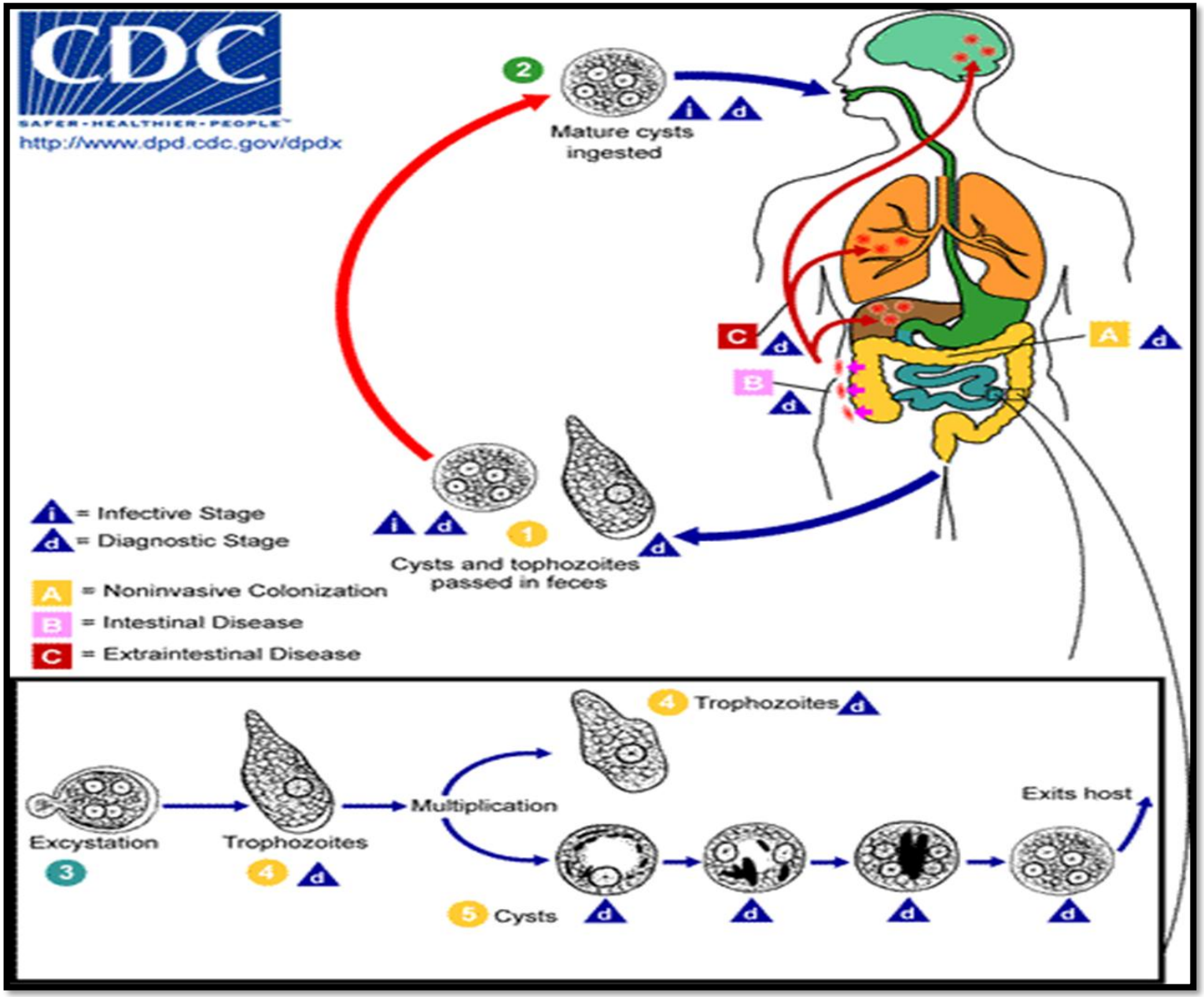
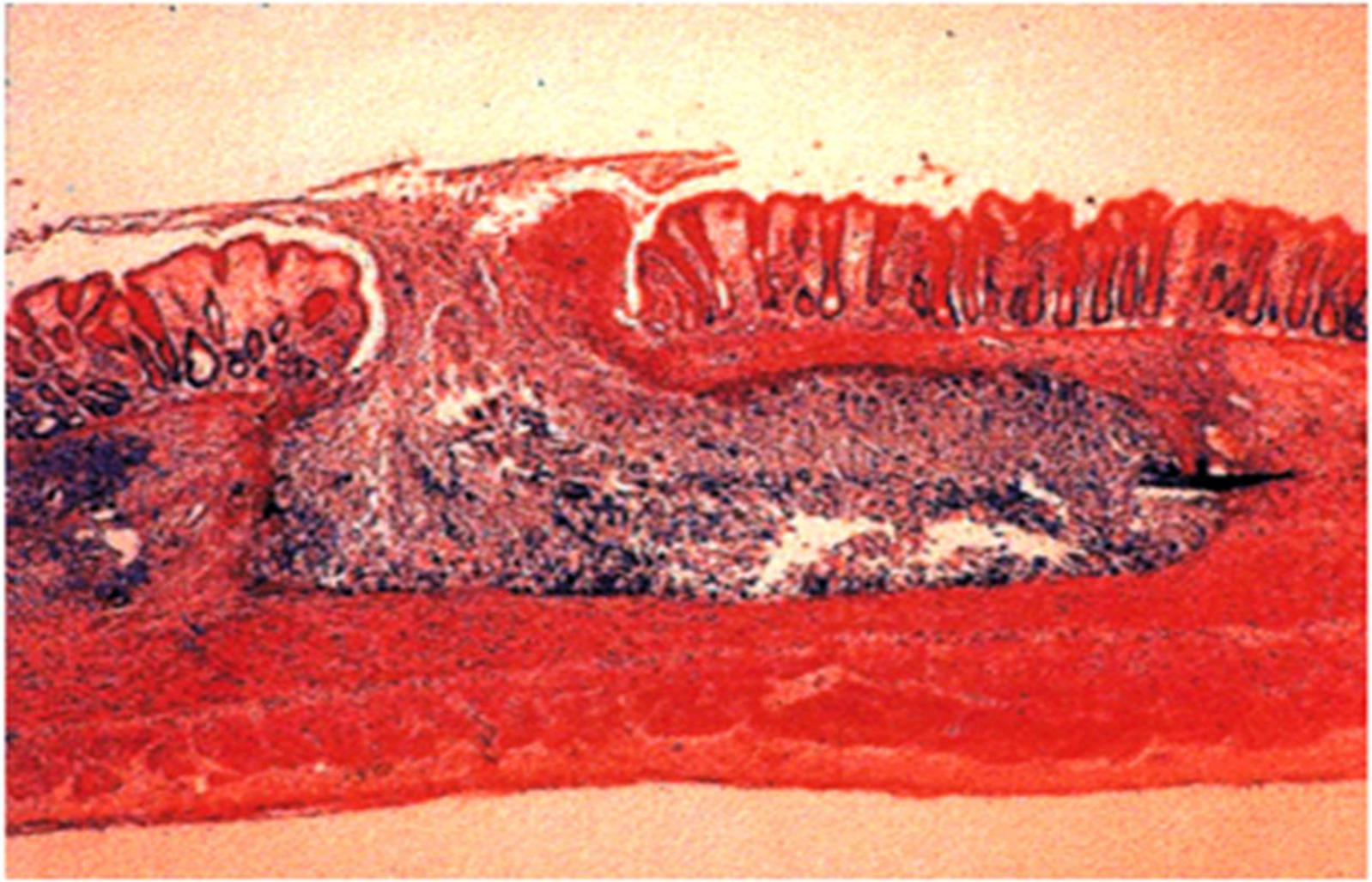
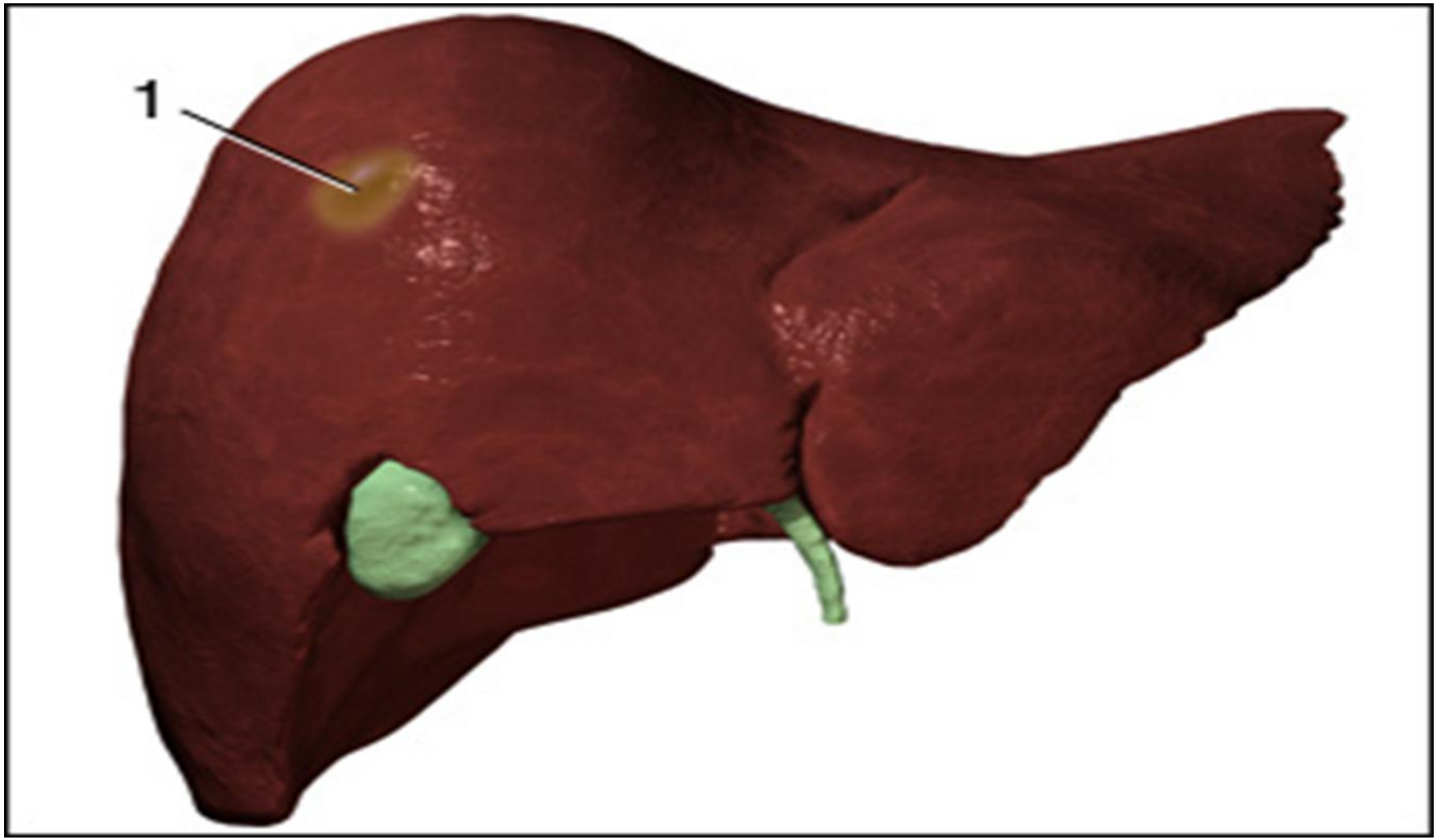

CDC
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2
Mature cysts ingested
i d
C d
A d
B d
i d
1
Cysts and tophozoites passed in feces
d
i = Infective Stage
d = Diagnostic Stage
A = Noninvasive Colonization
B = Intestinal Disease
C = Extraintestinal Disease
4 Trophozoites d
Excystation
3
Trophozoites
4 d
Multiplication
5 Cysts
d
d
d
d
Exits host

Figure 1. Invasion of submucosa by trophozoites. The lesion spreads out laterally, creating the flask-shaped amebic ulcer. (Histopathology, UFPA, Araújo R.).



Pyogenic- Liver Abscess



Microscopic identification

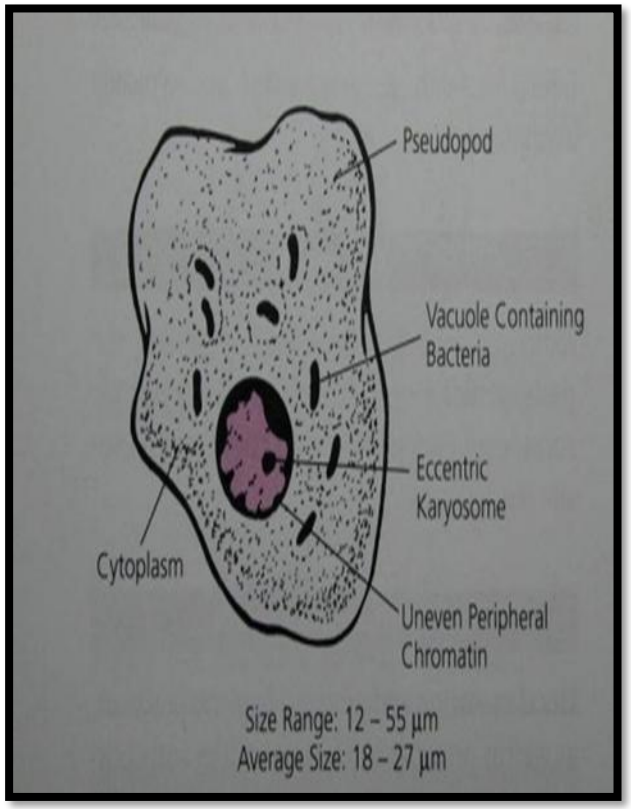
This can be accomplished using:

- Fresh stool: wet mounts and permanently stained preparations (e.g., trichrome).

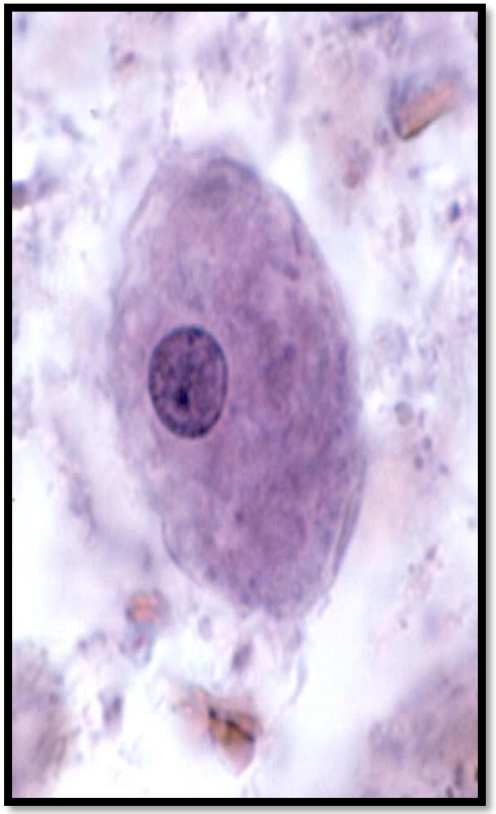
- Concentrates from fresh stool: wet mounts, with or without iodine stain, and permanently stained preparations (e.g., trichrome).

2-*Entamoeba coli*

- It has cosmopolitan distribution (world-wide distribution).
- It has (2) stages, trophozoite and cyst.
- The diameter of the trophozoite is (15-50µ), it has spherical shape, the ectoplasm couldn't recognize from the endoplasm, the food vacuoles contain bacteria and other enteric microbes.
- The nuclear membrane studded from the inner surface with large irregular chromatin granules, (ecentric and large karyosome).
- The trophozoite has a sluggish movement, short extended pseudopodia.







Entamoeba coli (trophozoite)

Cyst stage

- The mature cyst has a diameter (10-35µ)
- (8) nuclei
- The chromatoid bodies have an irregular sharp ended (splinter-like)







Entamoeba coli (cyst)

General information

Definitive Host: Humans

Intermediate Host: None

Mode of transmission: Ingestion of contaminated food and water.