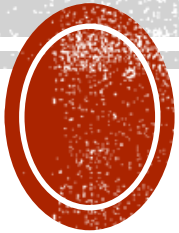
LAB-2-
CLASSIFICATION OF PARASITE

Submitted by

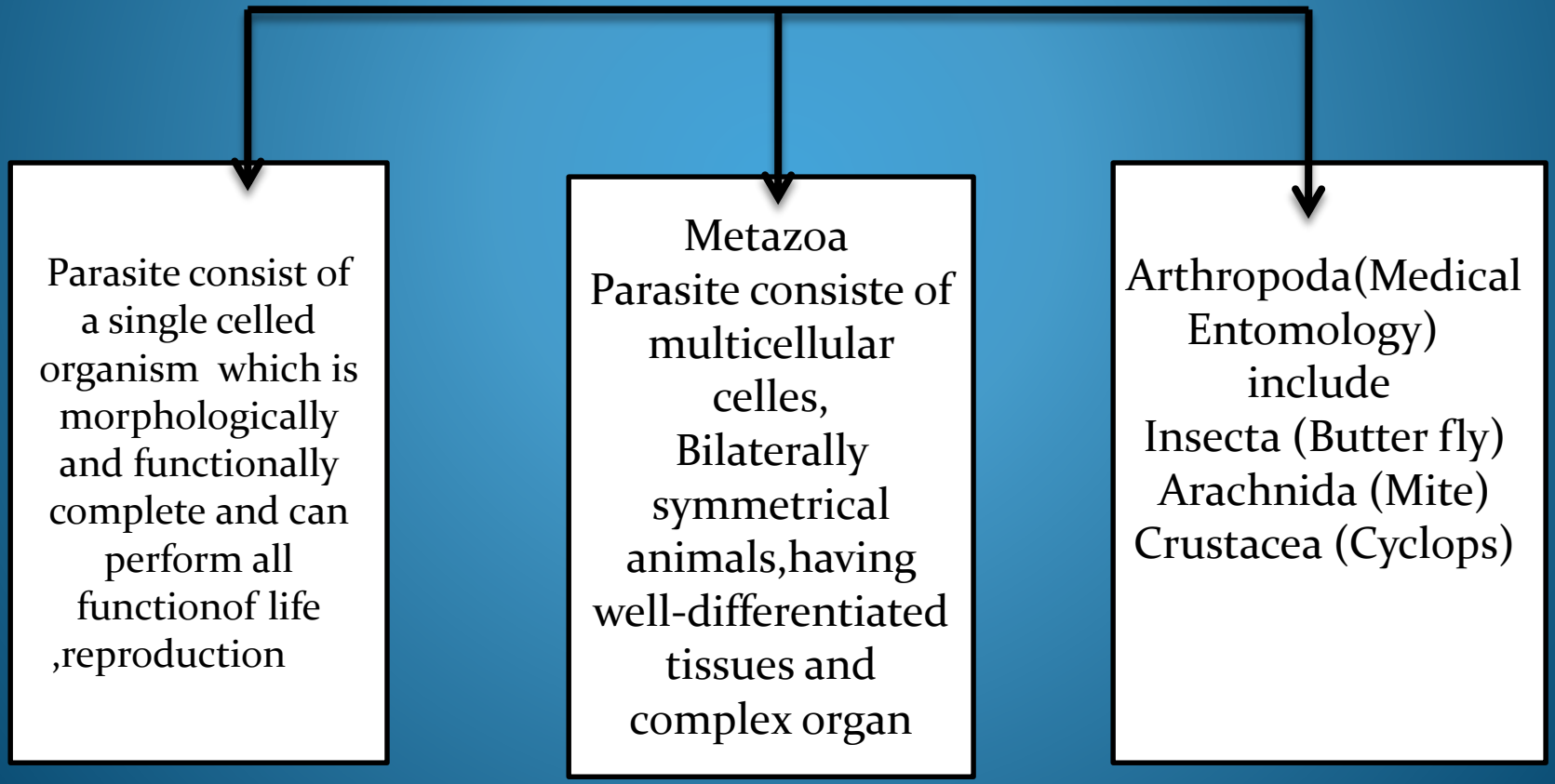
assist.Lec.Hiba Hadi Rashid



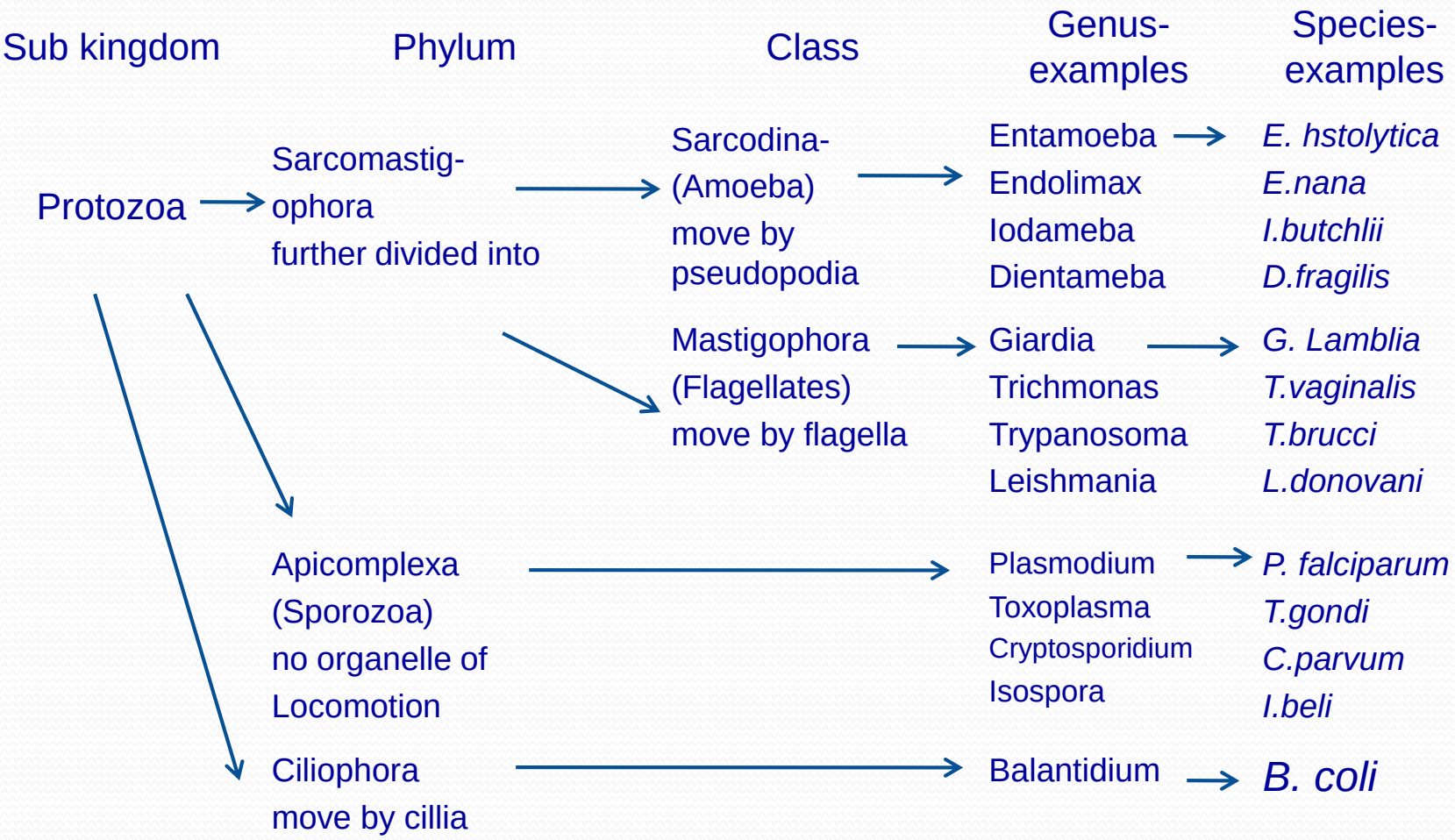
Classification of Medical Parasite

Parasites of medical importance come under the Kingdom called Anemalia

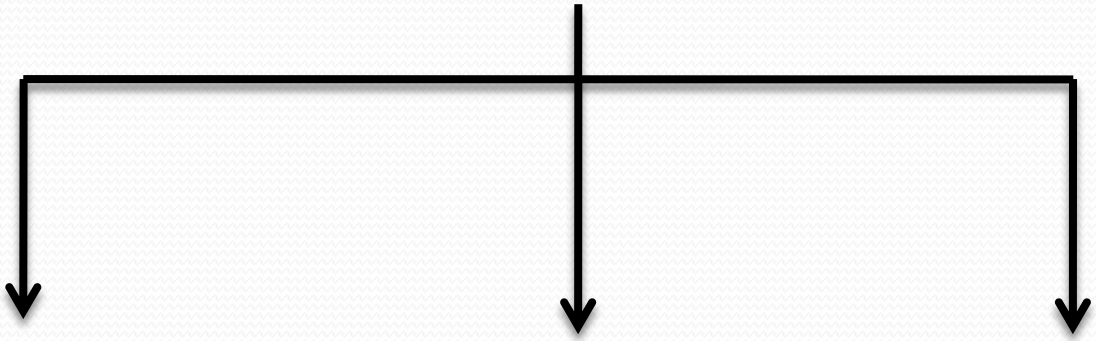
The parasite divide into three main groups



Taxonomic classification of Protozoa



They are three groups of Amoeba



Pathogenic :-
E. histolytica

Nonpathogenic ;-
Entamoeba coli
E.gingivalis
Endolimax nana
Iodameba butschili
Dientameba fragilis

Free Living
Neagleria fowleria

Pathogenic Amoeba

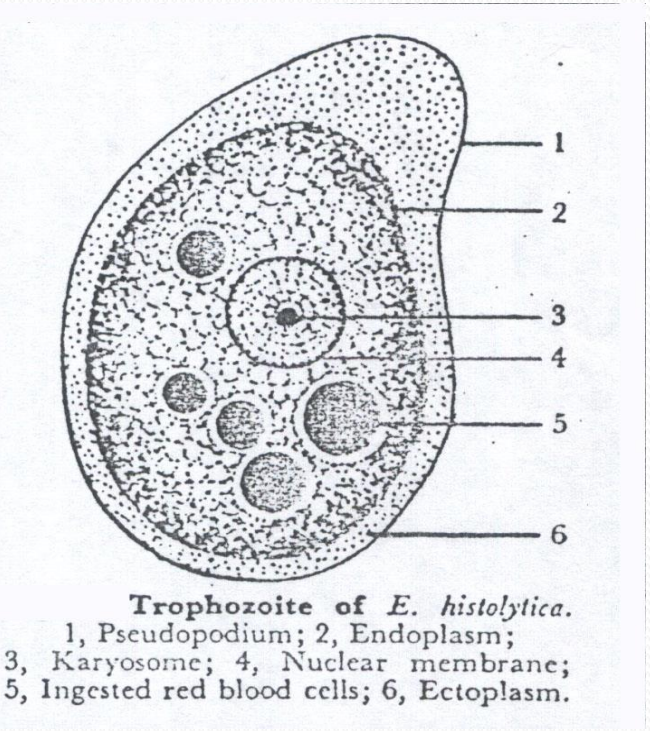
Entamoeba histolytica

Disease :Amebiasis (amebic dysentery, amebic hepatitis)

Amoebas unicellular microorganisms with simple life cycle which can be divided into two stages

- Trophozoite : actively motile feeding stage
- Cyst : quiescent,resistanse ,infective stage
- The reproduction is through binary fission
- Motility by extention of pseudopodia (False Feet)

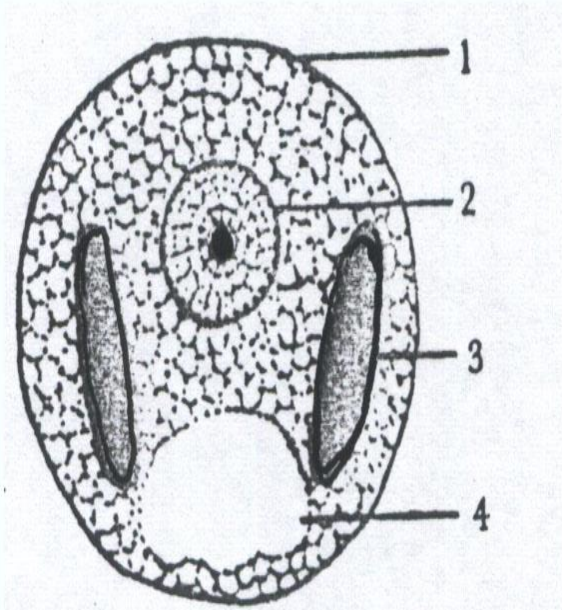
Trophozoite :-Vary in size from 10 – 60 Mm in diameter ,Active movment and undirectional through pseudopodia (finger shap),has single nucleus with centric karyosome and chromatin arrenged peripheral on the nuclear membrane , cytoplasm in clearly defind in two ectoplasm and endoplasm in case of dysentry food vacules contain RBCs



Trophozoite of *E. histolytica*.
1, Pseudopodium; 2, Endoplasm; 3, Karyosome; 4, Nuclear membrane; 5, Ingested red blood cells; 6, Ectoplasm.

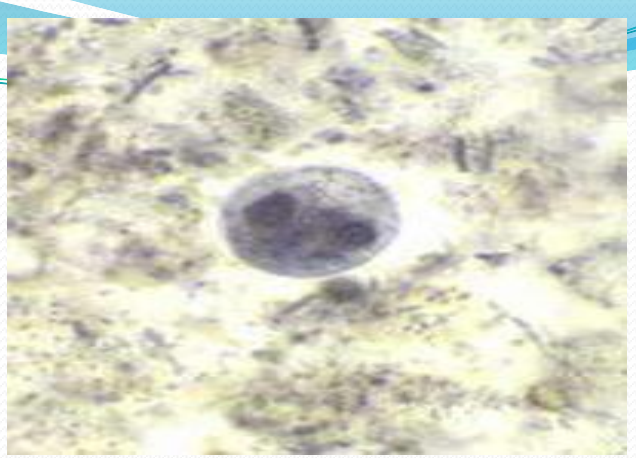
Cyst : (infective stage)

Are spherical or oval in shap ,size from 10 -20 Mm ,the cytoplasm contain chromatoidal bodies and 1 to 4 nuclei with central karyosome ,chromatoidal may be abscent in the mature cyst.



Cyst of *E. histolytica*.
1, Cyst-wall; 2, Nucleus;
3, Chromatoid bodies;
4, Glycogen vacuole.

E.histolytica Trophozoite

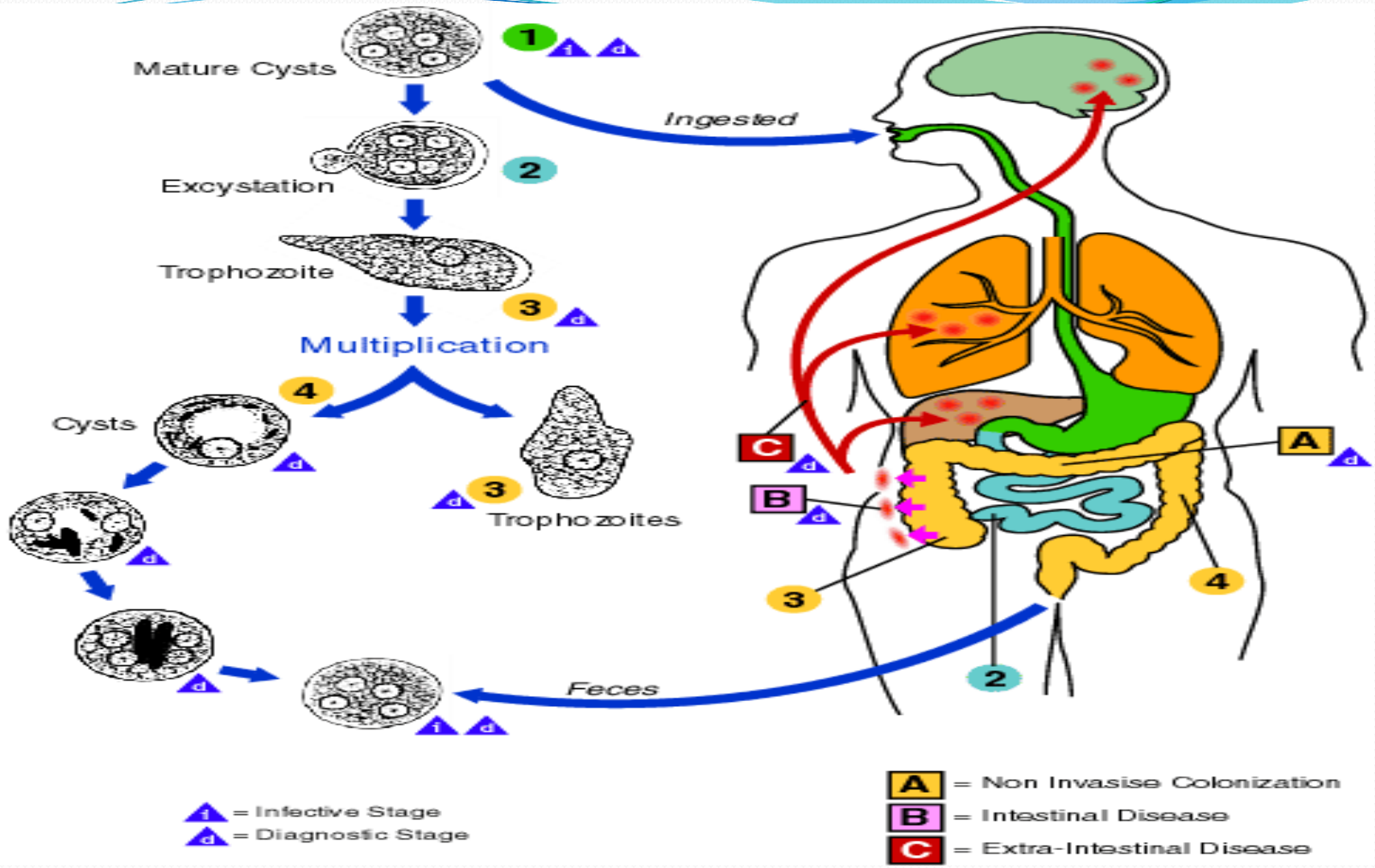


E.histolytica Cyst

E. histolytica Trophozoite

Life cycle of *E. histolytica*

Infection by E. histolytica occures by ingestion of cyst in fecally contaminated food,water or hands,the cyst resistane to the gastric environmentand passes to small intestine where it excystation Trophozoite are released which migrate to large intestine ,the troph. Multiply by binary fission and produce cyst which are passed in feces, (trophozoite can be passed in diarrheal stool,but rapidly destroyed outside the body,the troph.remain confined to the intestinal lumen in some individuals troph. non invade the intestinal who are thus asymptomatic carriers but in other patient troph. Invade the intestinal mucosa cases intestinal disease (lesion,Flaske shape) or through the blood stream can be invade liver, lung and brain.the cyst can survive days to weeks in the external environment and are responsible for transmission.



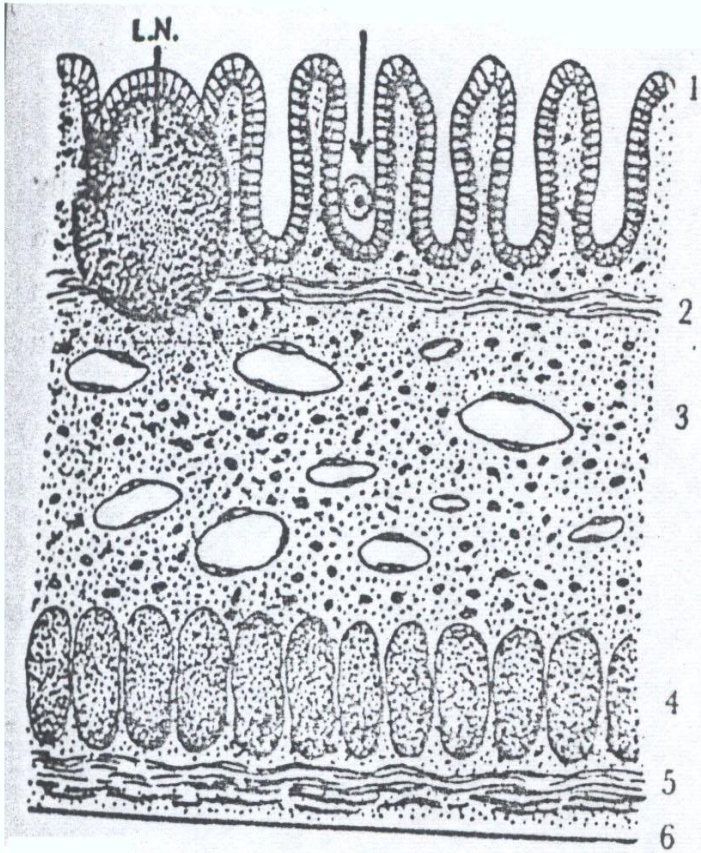
life cycle of *E.histolytica*

Pathogenisity & Clinical features

Produce local necrosis in intestine ,invasion the deeper mucosa until reach sub mucosa ,in other infection leads to secondary involvment of other organs ,primary liver but also the lung , brain and heart. Extra intestinal amebiasis associated with troph.

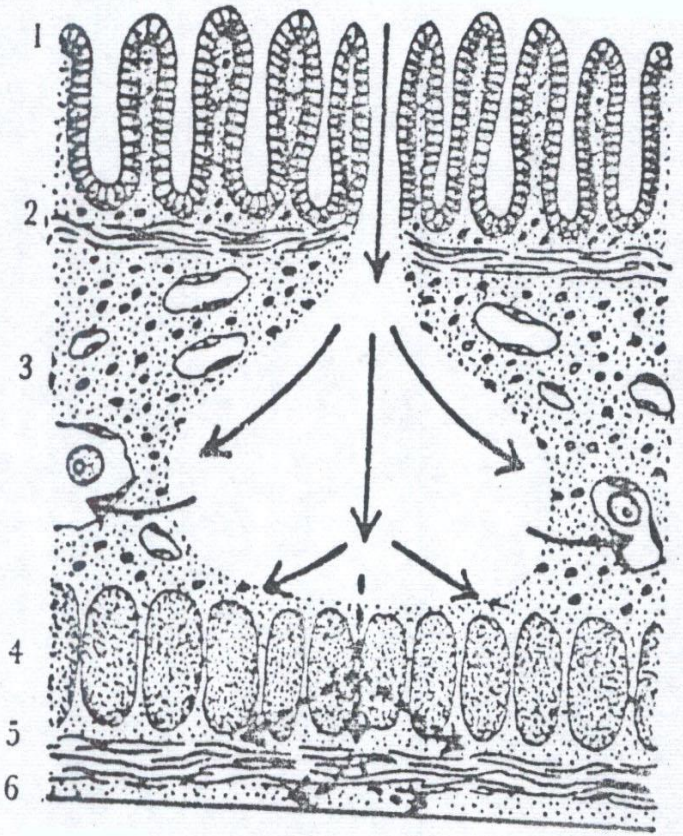
Also It infection may causes dysentery (diarrhoea blood with mucous ,abdominal pain,fever and crumping.

In extraintestinal amebiasis causes liver abscess,fever,epigastric pain,leukocytosis.



Microscopic anatomy of the large intestine.

1, crypts of Lieberkühn; 2, muscularis mucosae; 3, submucosa; 4, circular muscles; 5, longitudinal muscles; 6, peritoneum. L.N., solitary lymph node.



Invasion of *E. histolytica* through the intestinal wall.

Flask-shaped clear area represents the process of tissue necrosis. Continuous lines indicate the usual progress and dotted lines, the occasional approach.

Lab.Three

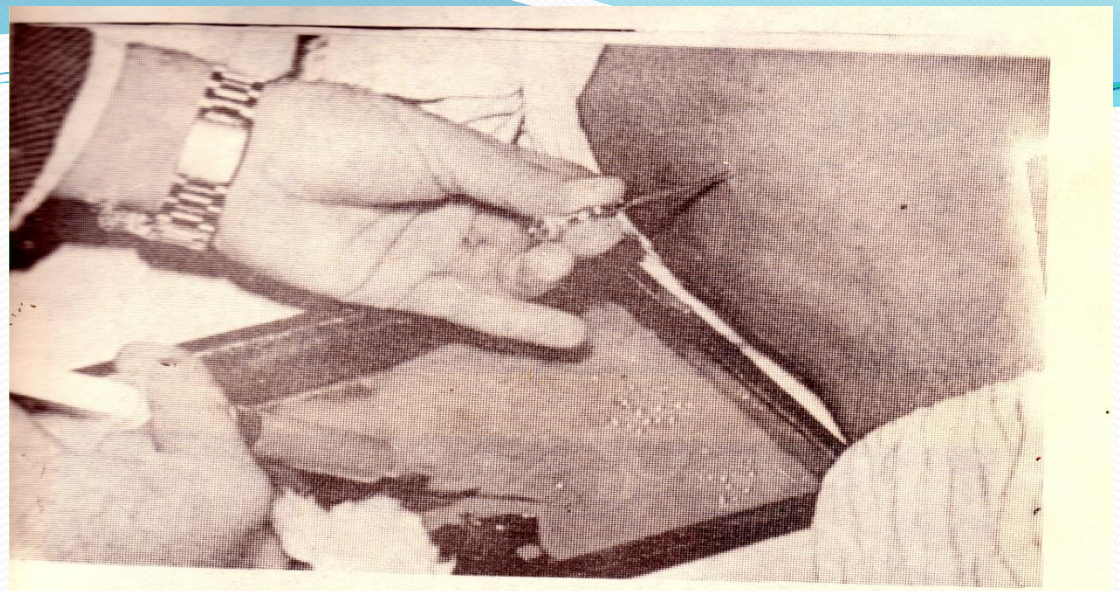
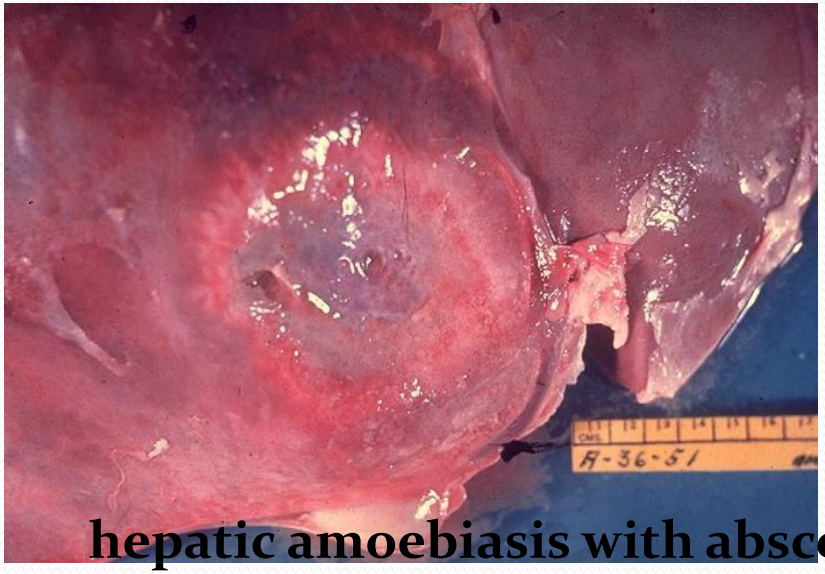


Fig 24 method of collection liver fluid to detected trophozoite of E. histolytica



hepatic amoebiasis with abscess the liver tissue damaged and liquefied (from dead patient)

Laboratory diagnosis:

- Macroscobopic exam of fresh stool and observed mucous,blood,red blood cells
- Microscopic by general stool examination for cyst or troph stage.
- Used scanning procedure for liver and other organs.
- Specific serological test with stool examination

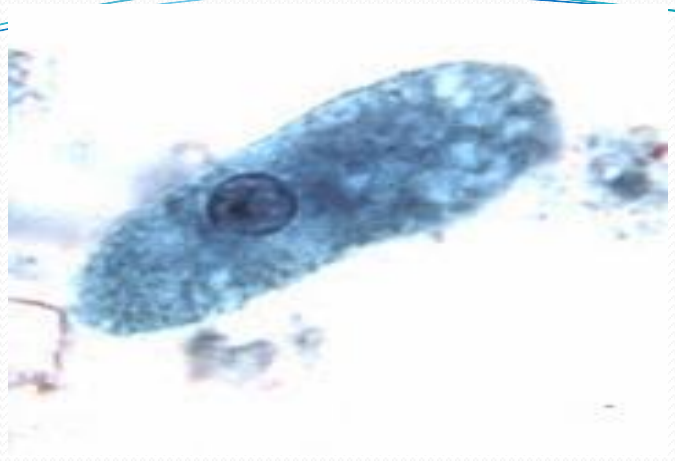
Non pathogenic Amoeba

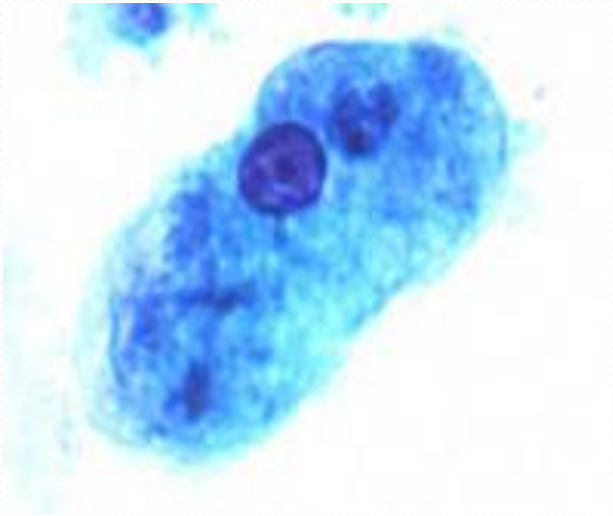
E. coli *Nonpathogenic,found in large intestine human,*

Table : Differentiation of trophozoite and cyst of E. histolytica and E. coli

Note : as E. coli is more commonly found in the dysenteric stool, the morphological differences from the pathogenic species E. histolytica is shown in the table below

	Entamoeba histolytica	Entamoeba coli
Trophozoiti.	20 to 30µm.	20 to 40 µm.
Size :	Very active	Sluggish
Motility :	Clearly defined into ectoplasm and endoplasm.	Not defined; ectoplasm .
Cytoplasm :		Bacteria and other materials but never red blood cells .
Cytoplasmic inclusions :	In food vacuoles, Red blood cells, leucocytes and tissue debris but no bacteria	
Nucleus :	Not visible in unstained preparation .	visible in unstained preparation .
Stained with iodine :		
Nuclear character :	Central karyosome; fine chromatin granules line the delicate nuclear membrane .	Eccentric karyosome; coarse chromatin granules line the thick nuclear membrane .





E. *histolytica* Troph.(18 – 60 µm)

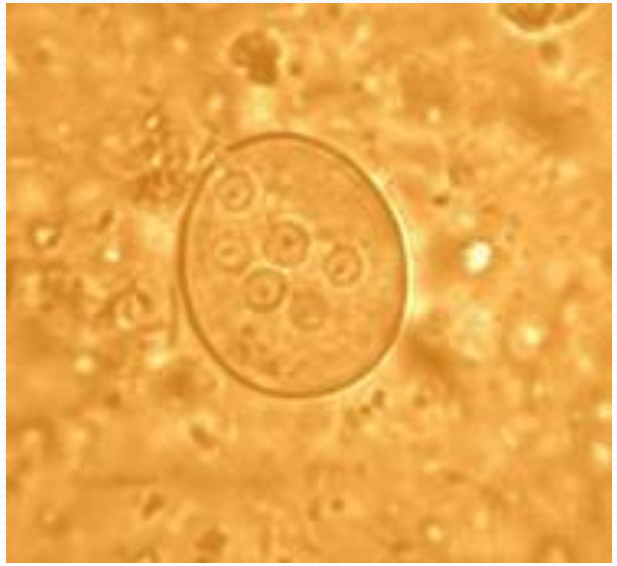
The motile in saline, active progressive and directional

E. Coli Troph. (20 – 50 µm)

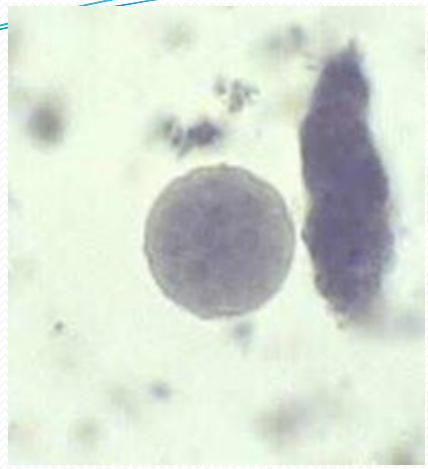
The motile in saline sluggish rarely progressive not directional

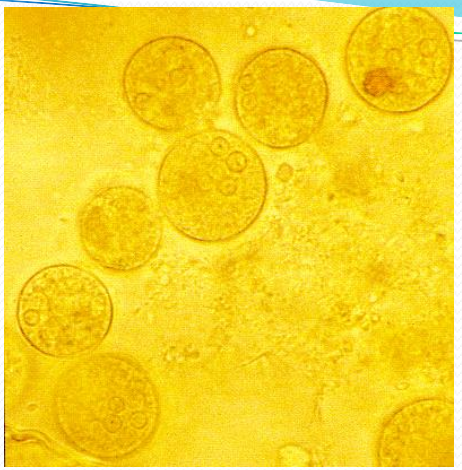
	Entamoeba histolytica	Entamoeba coli
cyst : Stained with iodine : Size : Nucleus : Glycogen mass : Fresh preparation : Chromatoid bodies :	 6 to 15 µm. 1 to 4 central karyosome. Visible in uninucleate stage . Rounded bars .	 15 to 20 µm. 1 to 8 eccentric karyosome . Large and visible in the binucleate stage. Filamentous, thread – like with square or pointed ends .

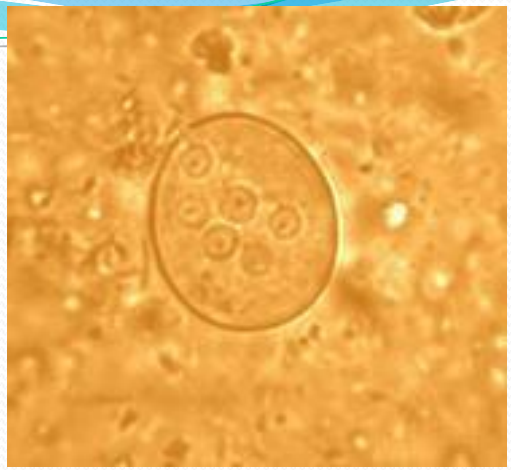
E. histolytica Cyst (5 – 20 µm)



E. Coli Cyst (15 – 33 µm)







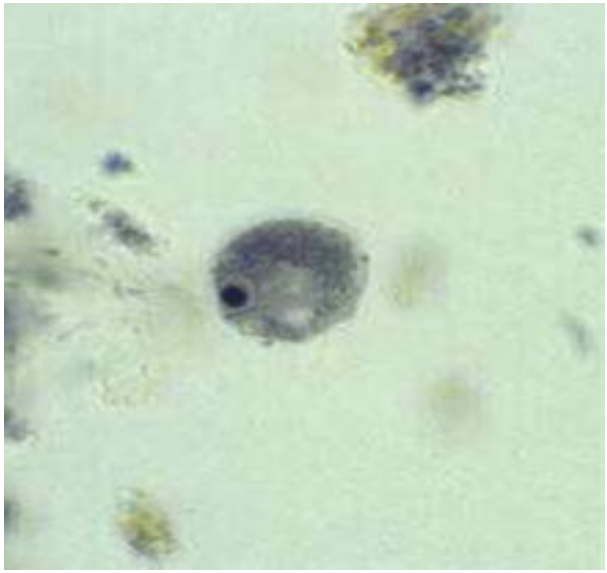
Entamoeba coli Cyst

Entamoeba coli Trophozoite

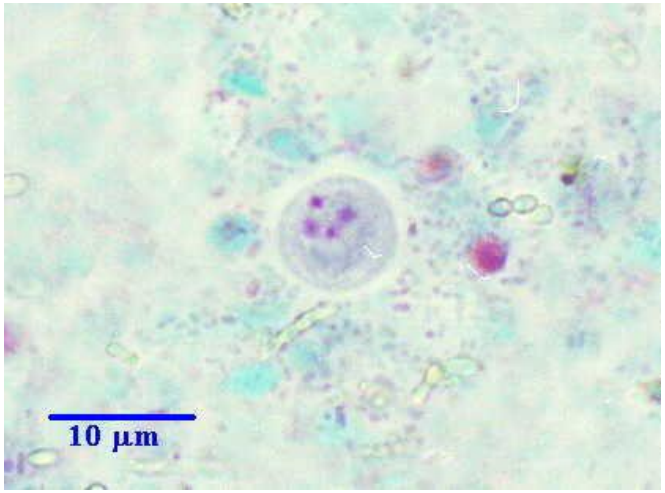
Fig E.coli from stool smear

Endolimax nana

- *live in large intastine ,smallest amoeba*
- *Life cycle is similar to E.histolytica*
- *Troph.has large karyosome*
- *Feed on bacteria*

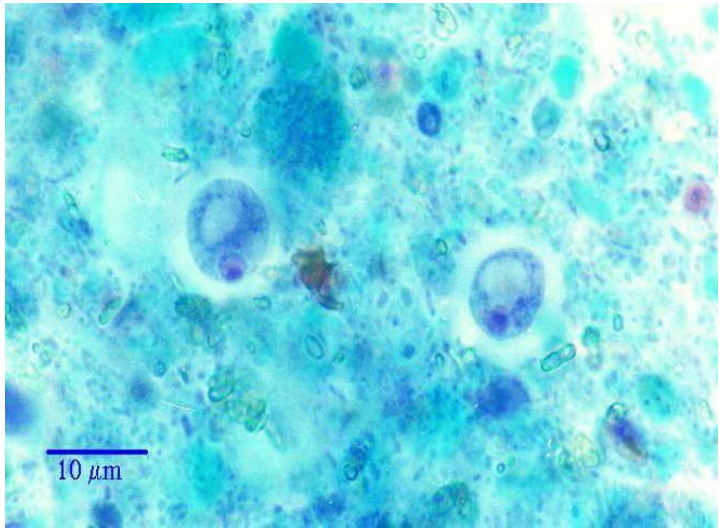


Cyst is small in size ,oval or spherical in shape contain four nuclei

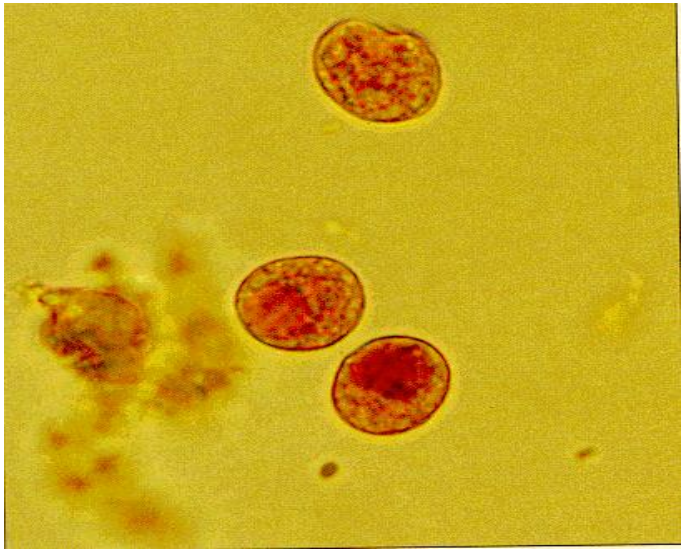


Iodomoeba butschilii

The natural habitat is the lumen of the large intestine ,troph.contain nucleau with large karyosome,feeding on bacteria



Cyst : uninuclatyed and spherical with large glycogen



Dientamoeba fragilis
Only troph.found
binucleate Trophozoite
Size 6 – 25 Mm

E. gingivalis
- *All species oral,*
- *troph.stage present*
- *Troph. 5 – 35 Mn*

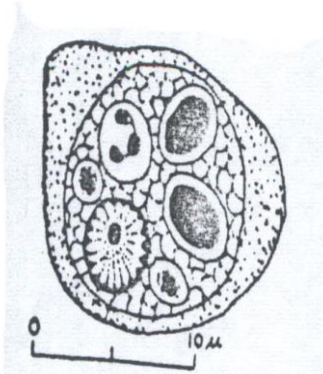


Fig. 28—Trophozoite of *E. gingivalis* showing ingested bodies.