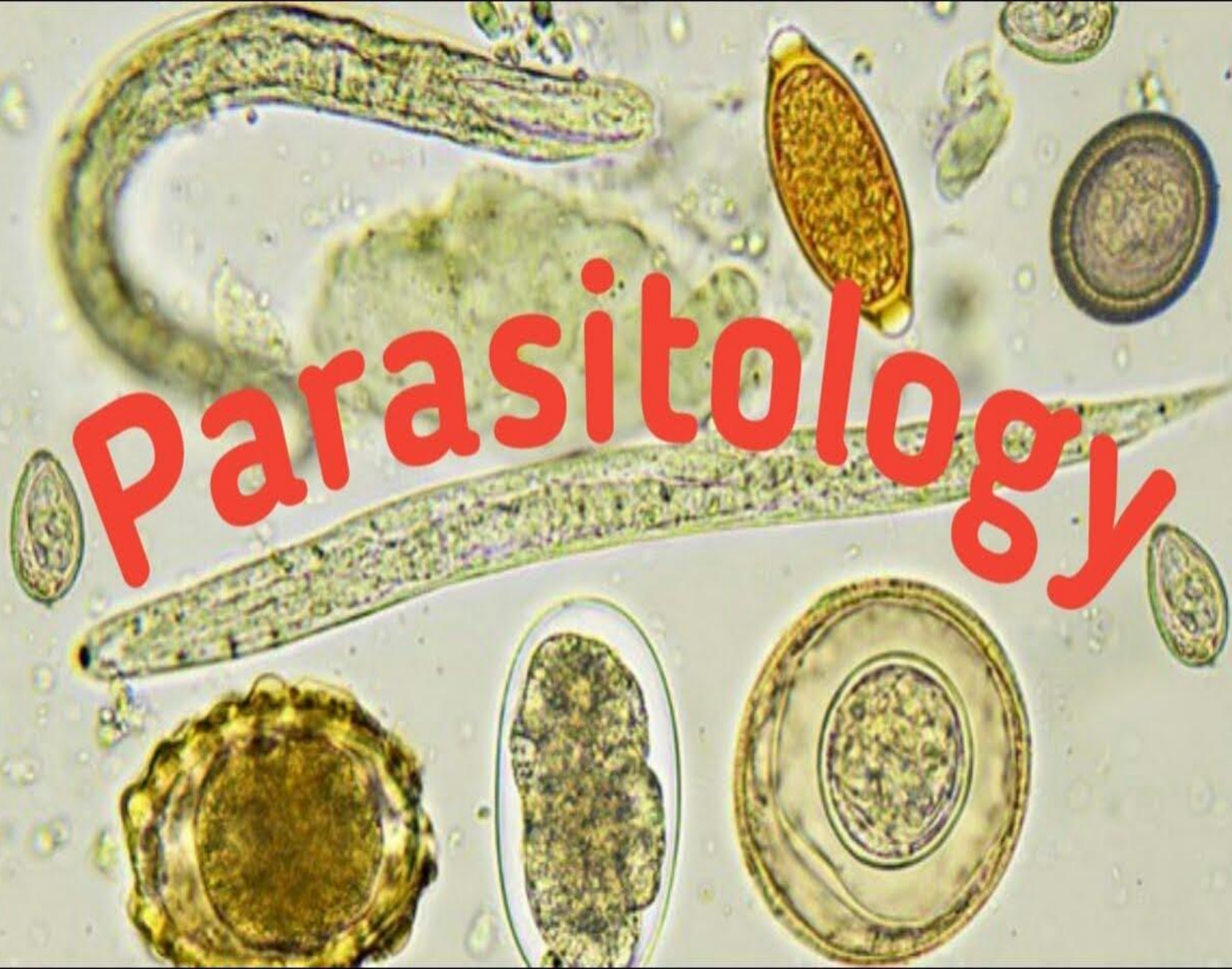


BIOLOGICAL BASES OF PARASITISM

CLASS- SARCODINA (RIZOPODA)

PRESENTED BY -
RAJ PATEL 192B
SCIENTIFIC ADVISOR-
PhD. SVETLANA SMIRNOVA



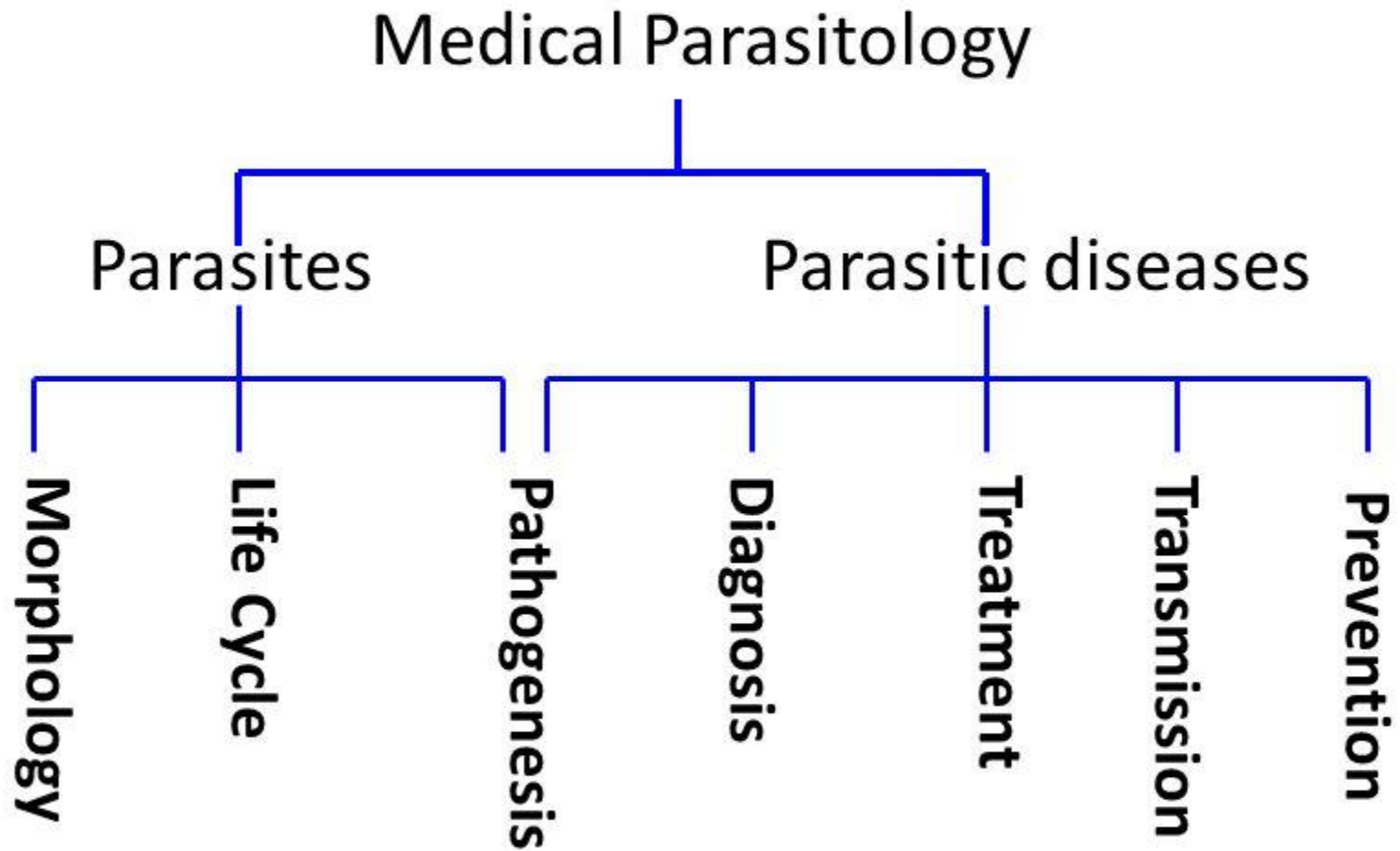
Parasitology

What is Parasitology?

A parasite is an organism that live on or within another organism called the host .

Parasitology is a science of studying parasitism and a discipline dealing with the biology of parasites (including its morphology, embryology, physiology, biochemistry and nutrition, etc.), ecology of parasitism with emphasis on parasite-host and parasite-environment interactions.

Definition of Medical Parasitology

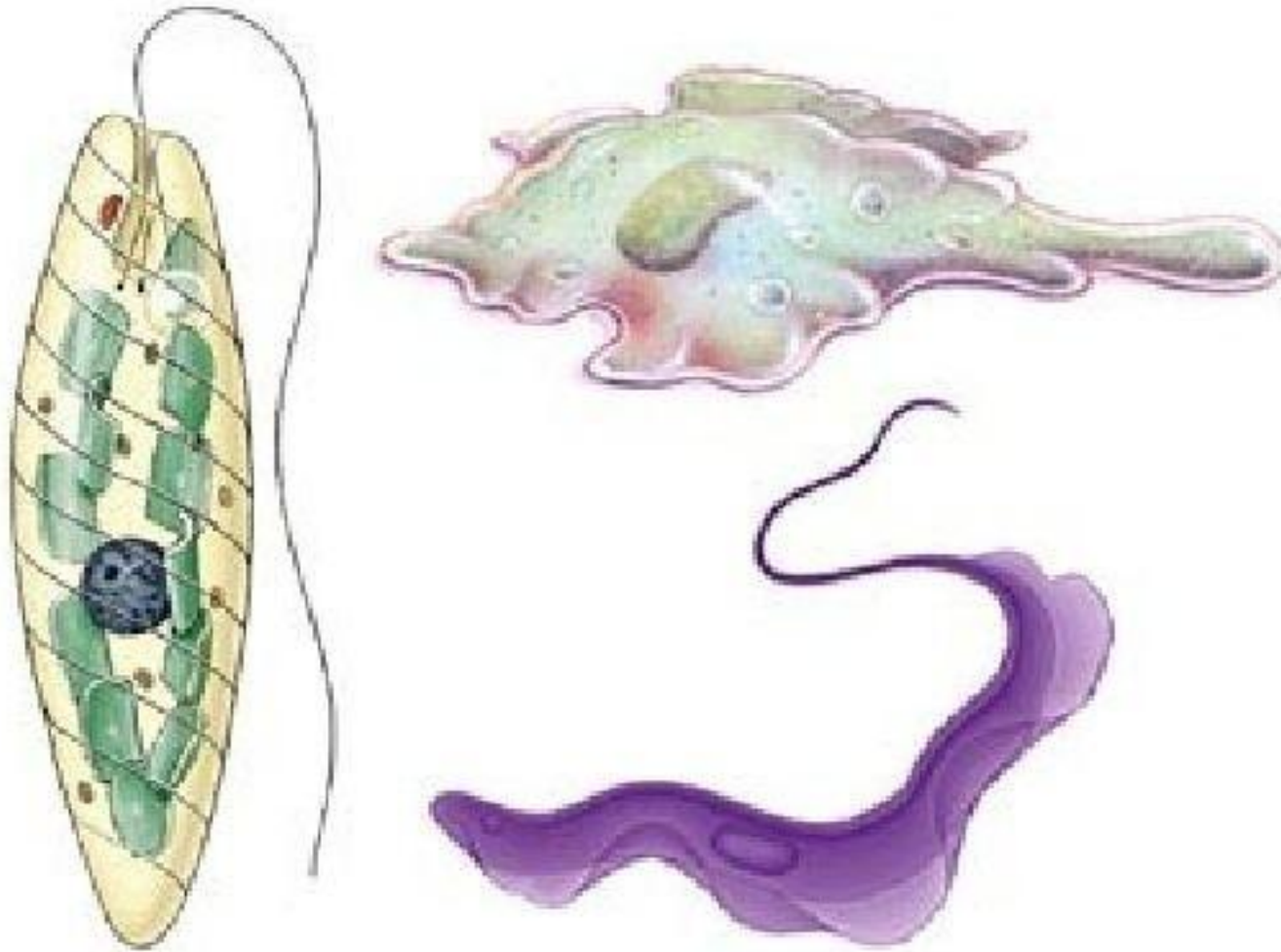


CLASSIFICATION

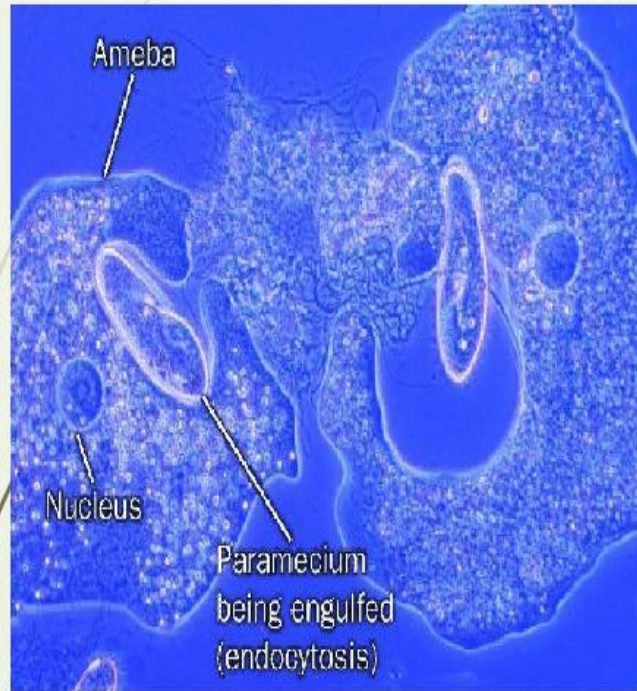


- KINGDOM- PROTISTA
- SUBKINGDOM- PROTOZOA
- PHYLUM- SARCOMASTIGOPHORA
- SUBPHYLUM- SARCODINA
- CLASS- LOBOSEA
- ORDER- AMOEBIDA
- FAMILY- ENDAMOEBIDAE

SARCOMASTIGOPHORA



Phylum Sarcodina - Amoeba



Thrive in fresh water, salt water and soil.

Many are motile, with pseudopods (“false feet”) used for locomotion.

Some are parasitic species, found in animal intestines.

ENTAMOEBA HISTOLYTICA

Kingdom	Animalia
Phylum	Protozoa
Class	Rhizopoda
Genus	Entamoeba
Species	<i>E. histolytica</i>

ENTAMOEBA HISTOLYTICA is the causative agent of the anatroous disease *amoebiasis* (amoebic dysentery). Amoebiasis is characterized by frequent watery stools mixed with blood and mucus, abdominal pain, fever, and dehydration of the body.



Entamoeba histolytica

Causes : Amoebiasis.

Geog.Distribution: **cosmopolitan**

Habitat: **caecum and sigmoido-rectal region of man.**

Infective stage:

Quadrinucleate cyst.

Mode of infection:

Eating raw vegetables (salad)

Drinking water **Heteroinfection**

Flies and food handlers (cyst passer)

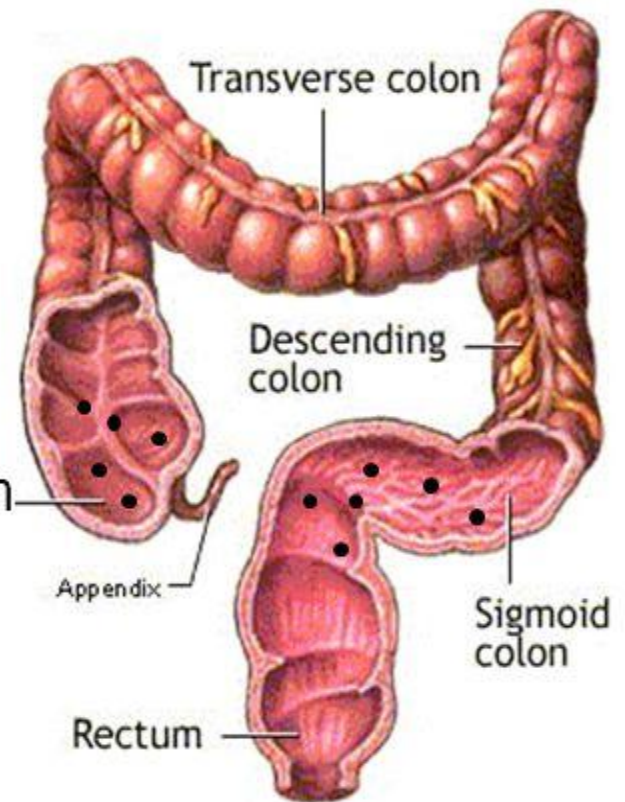
Faeco-oral **Autoinfection**



Trophozoite



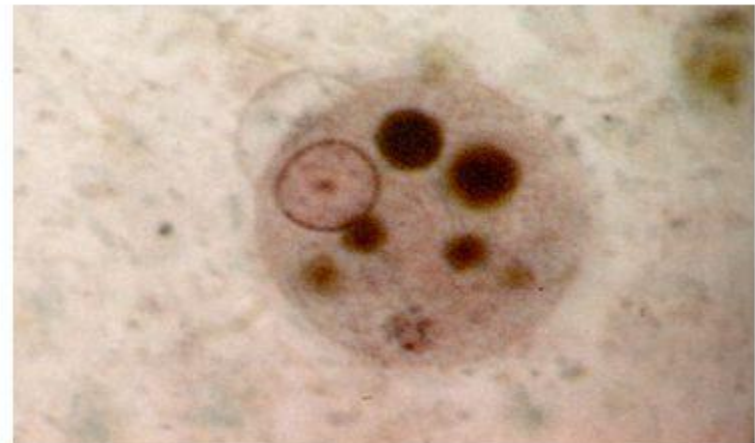
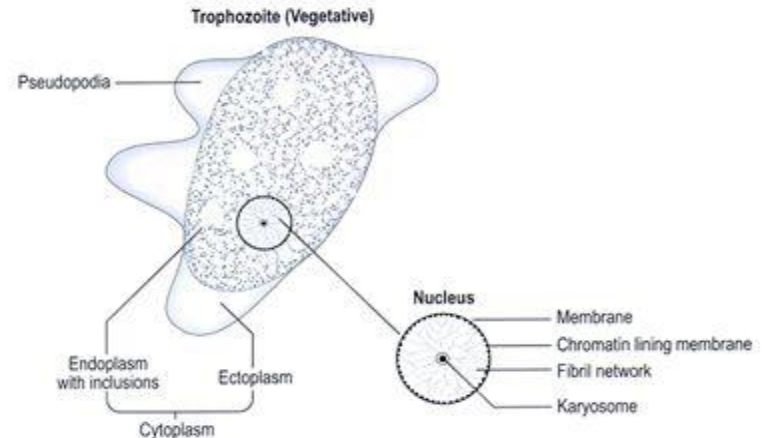
Cyst



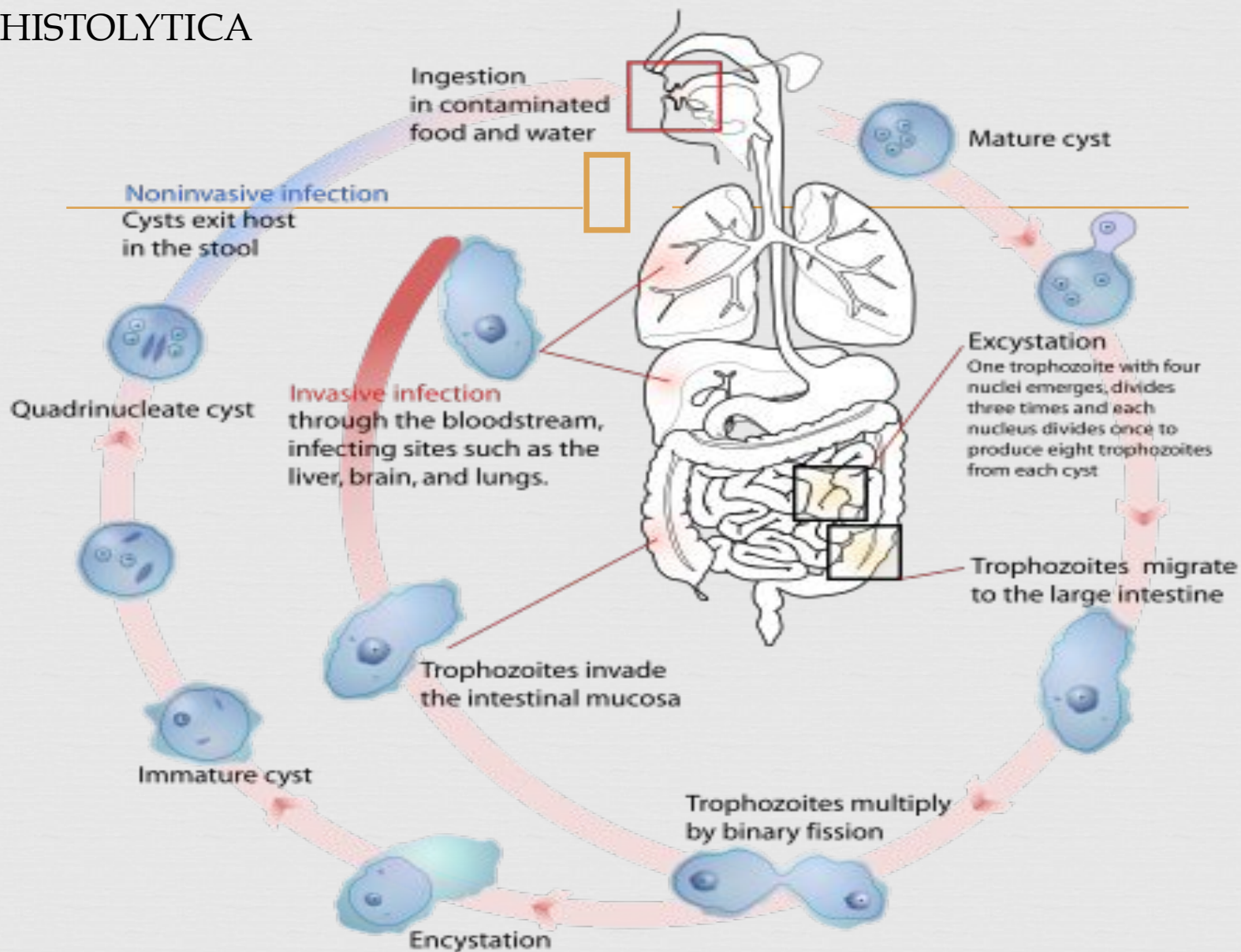
Entamoeba histolytica

Morphology of Trophozoite(vegetative form):

- 10-60 X 15-30 μ average (20-25 μ)
- Cytoplasm is clearly differentiated into:
- **Ectoplasm:** is clear with well developed pseudopodia.
- **Endoplasm:** dense & fine granular enclosing:
- **Nucleus:** spherical containing central karyosome & peripheral evenly distributed small chromatin dots.
- **Food vacuoles:** contain leucocytes-bacteria-may be RBCs.



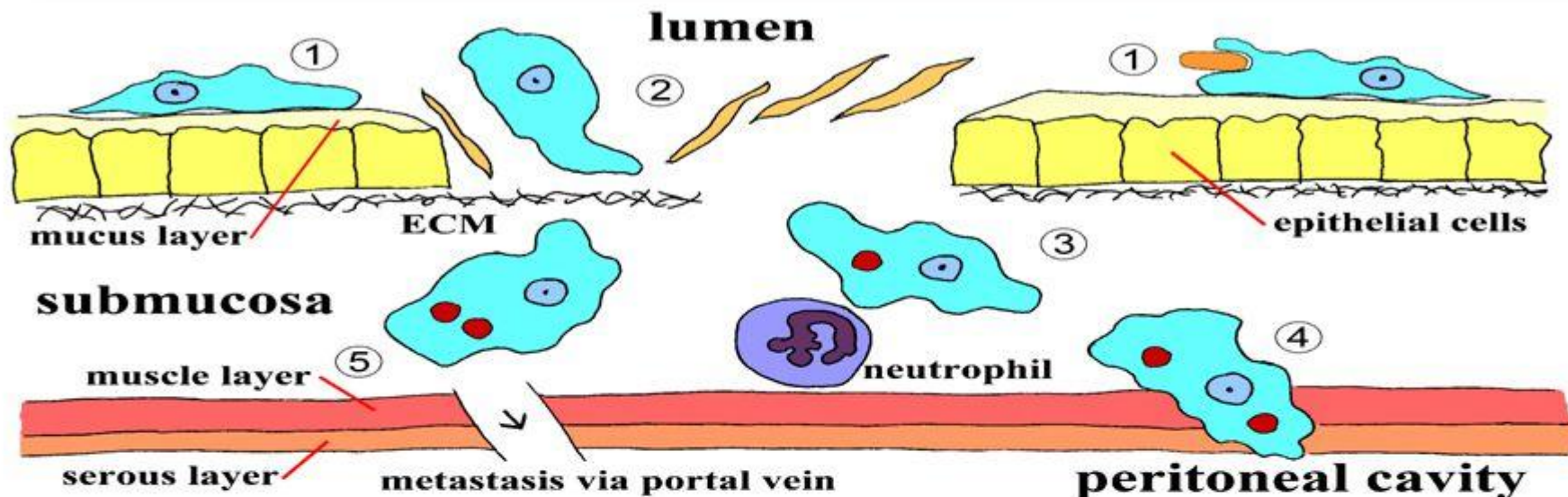
LIFE CYCLE OF ENTAMOEBA HISTOLYTICA



LIFE CYCLE OF *E. histolytica*



Pathogenesis (Cont.)



Factors determining Pathogenicity

1- Strain

E. dispar similar to *E. histolytica* differ in being non invasive

2- Virulence

Virulent strains are capable of transformation into invasive due to:-

- * Adherence and colonization
- * Contact dependent cell lysis
- * Phagocytic activity
- * Enterotoxin production
- * Lytic enzyme secretion (proteolysis)

3-Host factors

- 1- Immunity (secretory IgA) 2- Nutrition: carbohydrate rich diet ↑, protein ↓, change diet habit
 3- Drugs: immunosuppressive. 4- Debilitating states (malignancy, pregnancy, etc),.
 5- Intestine: bacteria & intestinal flora –hypermotility or stasis of the bowel.

Entamoeba histolytica

Laboratory Diagnosis:

1. Trophozoites or **cysts** visible in **stool**.
2. Serologic testing (**indirect hemagglutination test positive with invasive disease**).

Treatment:

- Metronidazole plus iodoquinol.

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.

Asymptomatic patients: are given luminal amoebicide as Diloxanide furoate.

Symptomatic patients: are given tissue amoebicide as Metronidazole followed by luminal amoebicide as Diloxanide furoate.

TRANSMISSION



- **E histolytica** is **transmitted** primarily through the fecal-oral route. Infective cysts can be found in fecally contaminated food and water supplies and contaminated hands of food handlers.
Sexual **transmission** is possible, especially in the setting of oral-anal practices (anilingus).

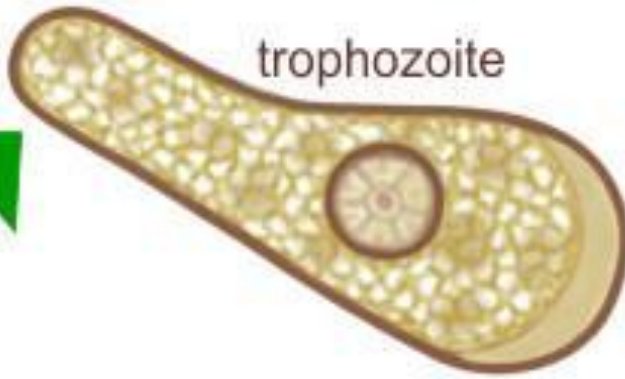
colon



ingestion



trophozoite



cyst



faecal-oral
transmission



excretion

external
environment



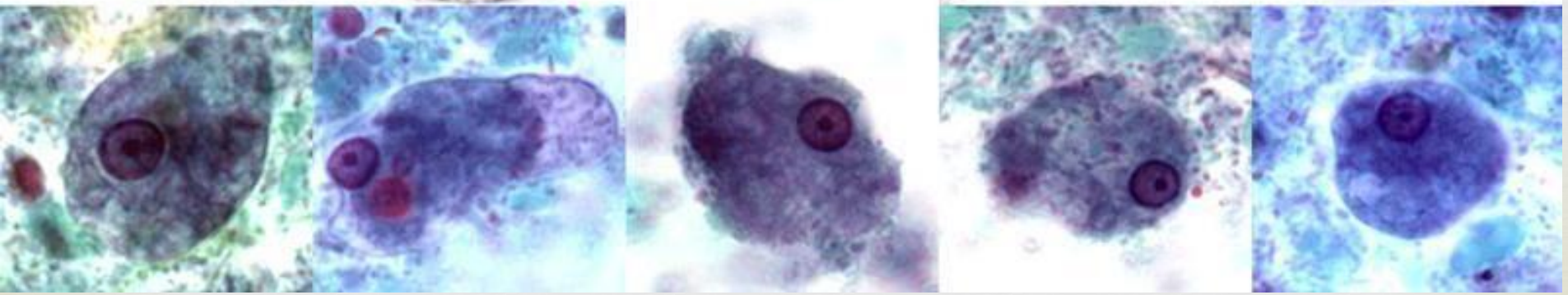
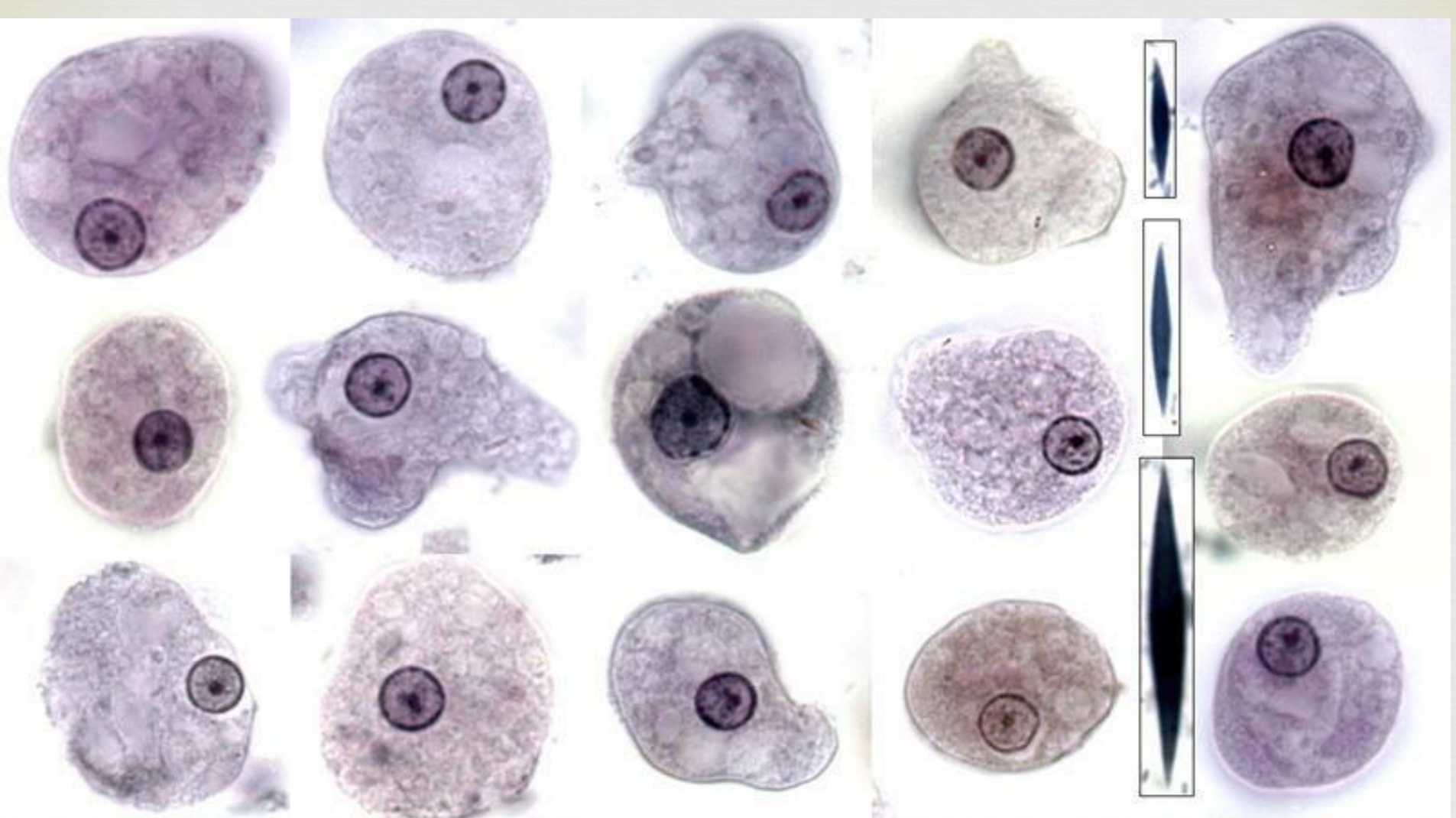
Prevention & Control

Primary prevention

- Safe excreta disposal
- Safe water supply
- Hygiene
- Health education

Secondary

- Early diagnosis
- Treatment





THANKS FOR YOUR
ATTENTION