

Symbiotic Amebae in Human Intestines

Entamoeba histolytica

Entamoeba dispar

Entamoeba coli

Entamoeba hartmanni

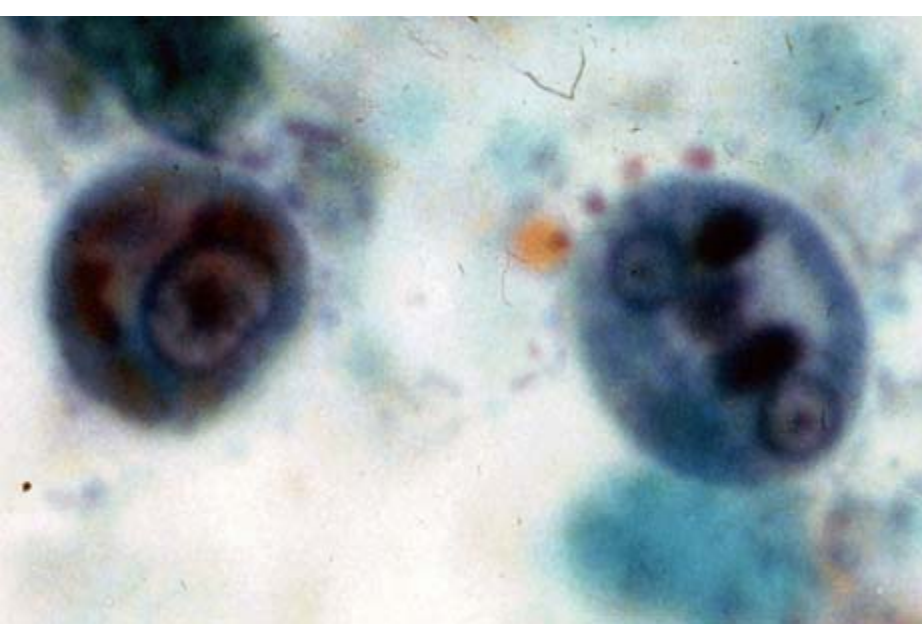
Endolimax nana

Iodamoeba bütschlii

*Dientamoeba fragilis**

*Blastocystis hominis***

Entamoeba histolytica

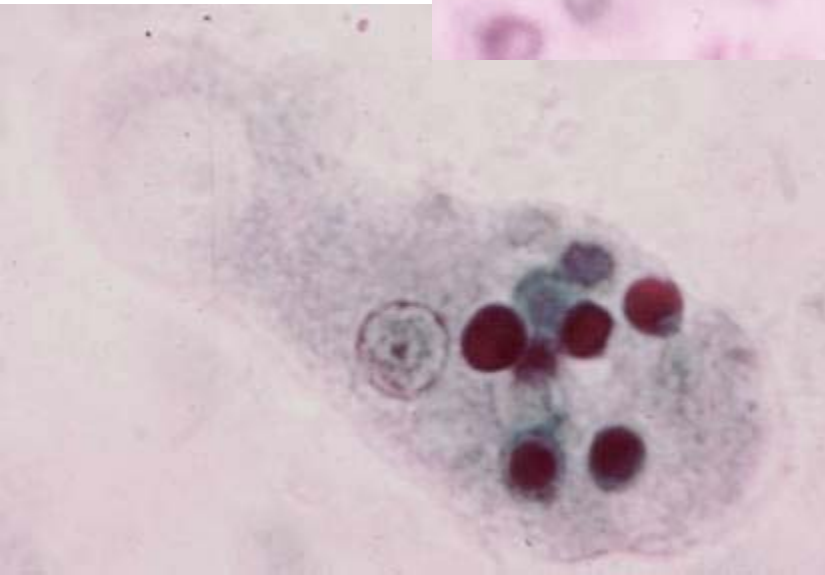


- **cysts**
 - 12-15 μm
 - 4 nuclei (mature)
 - blunt chromatoid bodies
- **trophozoites**
 - 15-20 μm
 - extended pseudopodia
 - progressive movement
- **nuclear structure**
 - peripheral chromatin
 - small karyosome



= *E. dispar*

Entamoeba histolytica



- **cysts**
 - 12-15 μm
 - 4 nuclei (mature)
 - blunt chromatoid bodies
- **trophozoites**
 - 15-20 μm
 - extended pseudopodia
 - progressive movement
 - >20 μm (invasive)
 - (\pm hematophagous)
- **nuclear structure**
 - peripheral chromatin
 - small karyosome

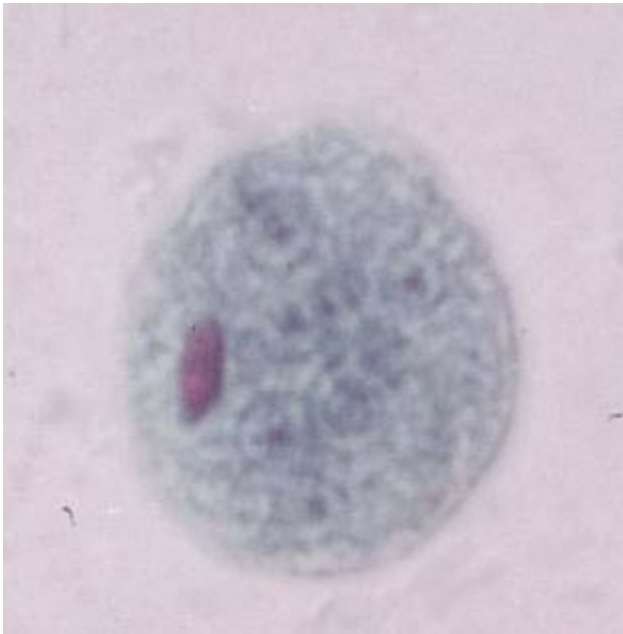
Entamoeba hartmanni



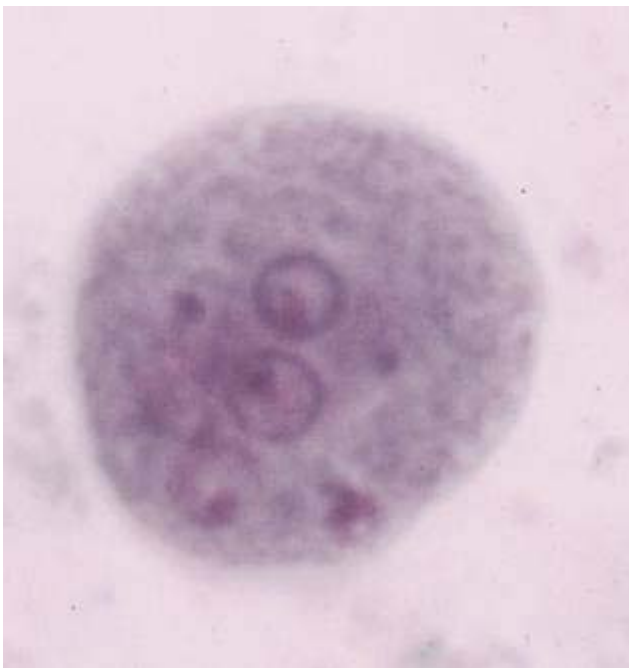
- $< 10 \mu\text{m}$ = *E. hartmanni*
- $> 10 \mu\text{m}$ = *E. histolytica*
- ‘small race’ of *E. histolytica*
- designated species in 1957

- **cysts**
 - 6-8 μm
 - 4 nuclei (mature)
 - blunt chromatoid bodies
 - CB persist in mature cysts
- **trophozoites**
 - 8-10 μm
- **nuclear structure**
 - peripheral chromatin
 - small karyosome

Entamoeba coli

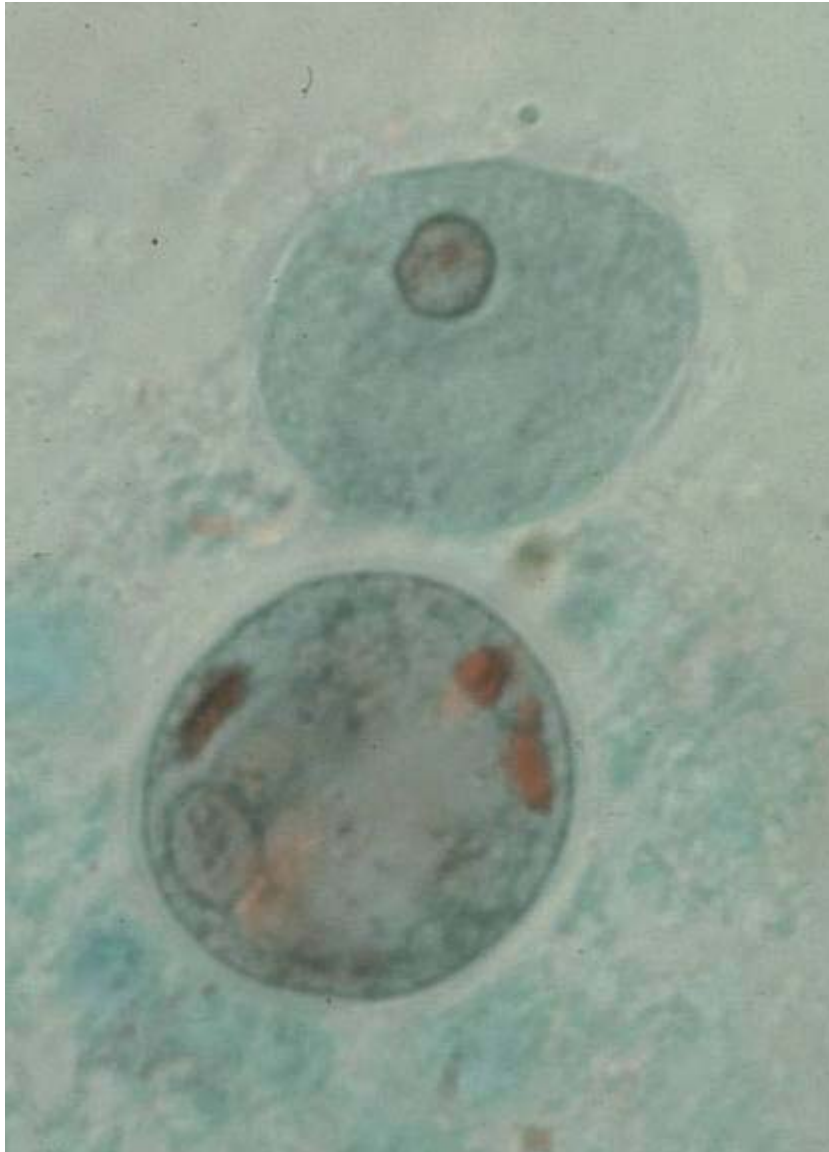


- **cysts**
 - 15-25 μm
 - 8 nuclei (mature)
 - pointed chromatoid bodies (less prominent)
- **trophozoites**
 - 20-25 μm
 - broad blunt pseudopodia
- **nuclear structure**
 - peripheral chromatin
 - small karyosome

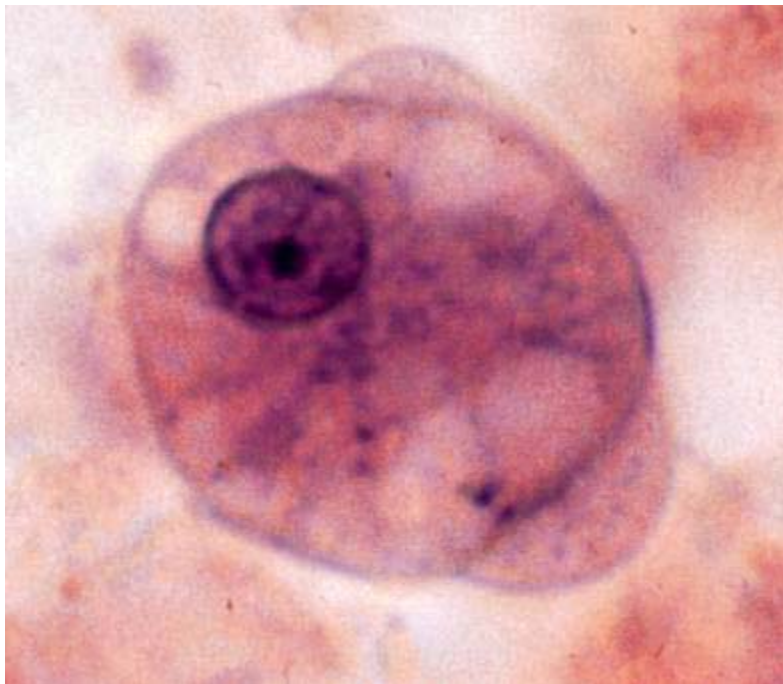
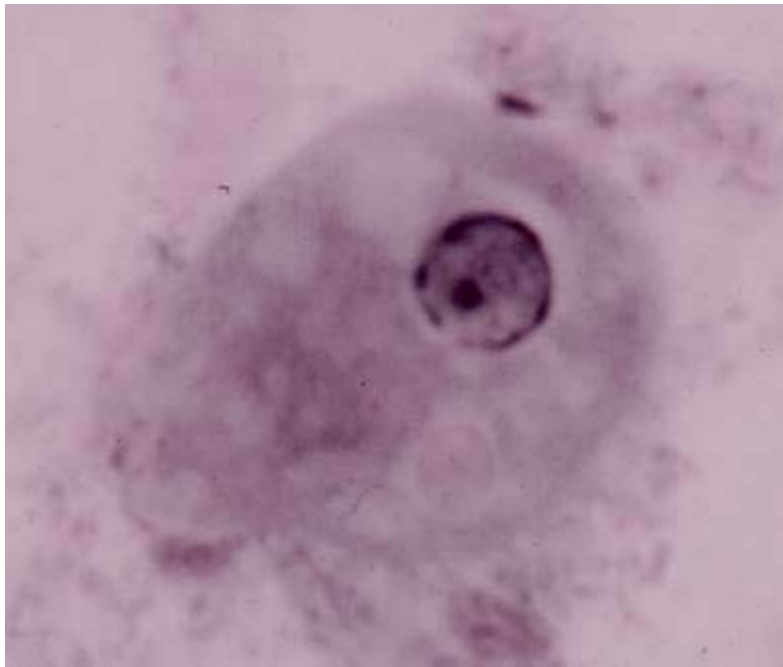


Entamoeba coli

- **cysts**
 - 15-25 μm
 - 8 nuclei (mature)
 - pointed chromatoid bodies (less prominent)
- **trophozoites**
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 - broad blunt pseudopodia
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 - peripheral chromatin
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Entamoeba coli



- **cysts**
 - 15-25 μm
 - 8 nuclei (mature)
 - pointed chromatoid bodies (less prominent)
- **trophozoites**
 - 20-25 μm
 - broad blunt pseudopodia
- **nuclear structure**
 - peripheral chromatin
 - small karyosome
 - irregular peripheral chromatin?
 - eccentric karyosome?

Other *Entamoeba*

E. gingivalis

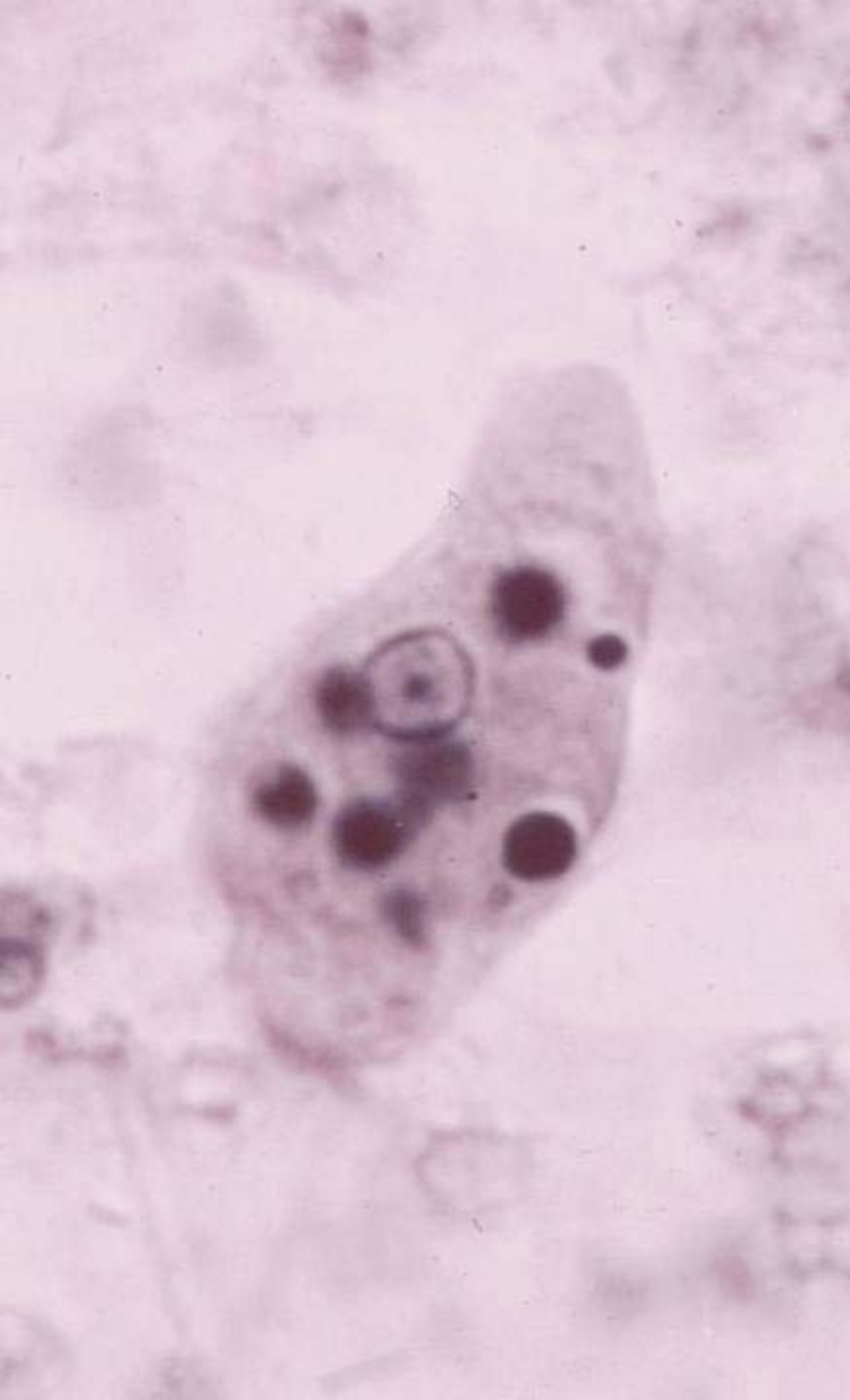
- oral cavity
- no cyst stage
- trophozoites nearly identical to *E. histolytica*
- periodontal disease?

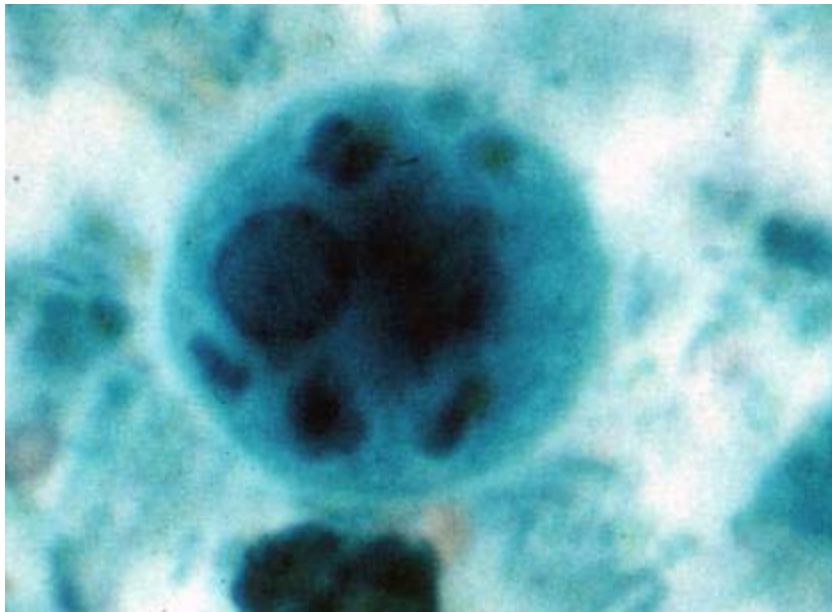
E. polecki

- rarely found in humans
- commensal of pigs & monkeys
- cyst has one nucleus

E. moshkovskii

- identical morphology as *E. histolytica*
- free-living (sewerage)
- cultured at 24°

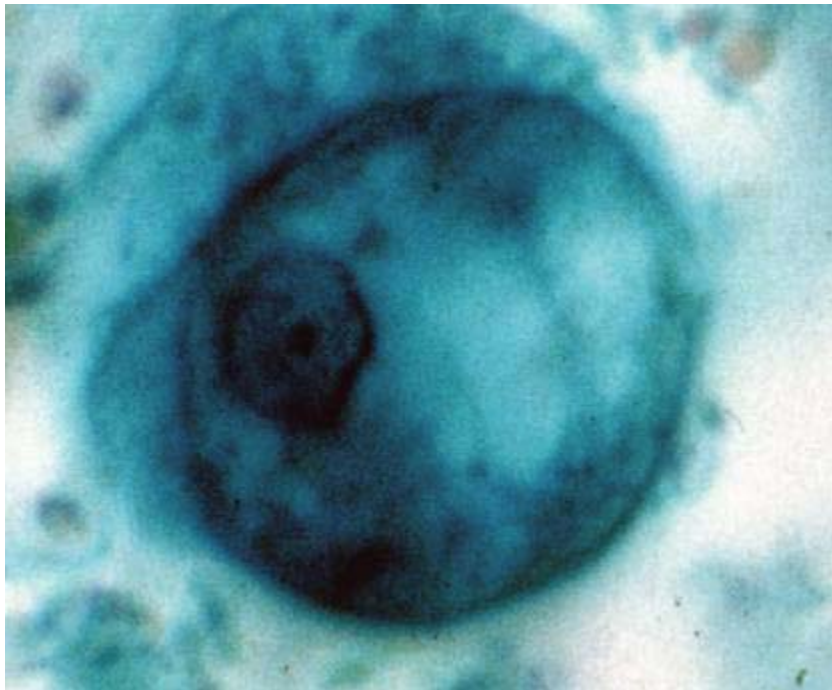




Other *Entamoeba*

E. gingivalis

- oral cavity
- no cyst stage
- trophozoites nearly identical to *E. histolytica*
- periodontal disease?



E. polecki

- rarely found in humans
- commensal of pigs & monkeys
- mature cyst has one nucleus

E. moshkovskii

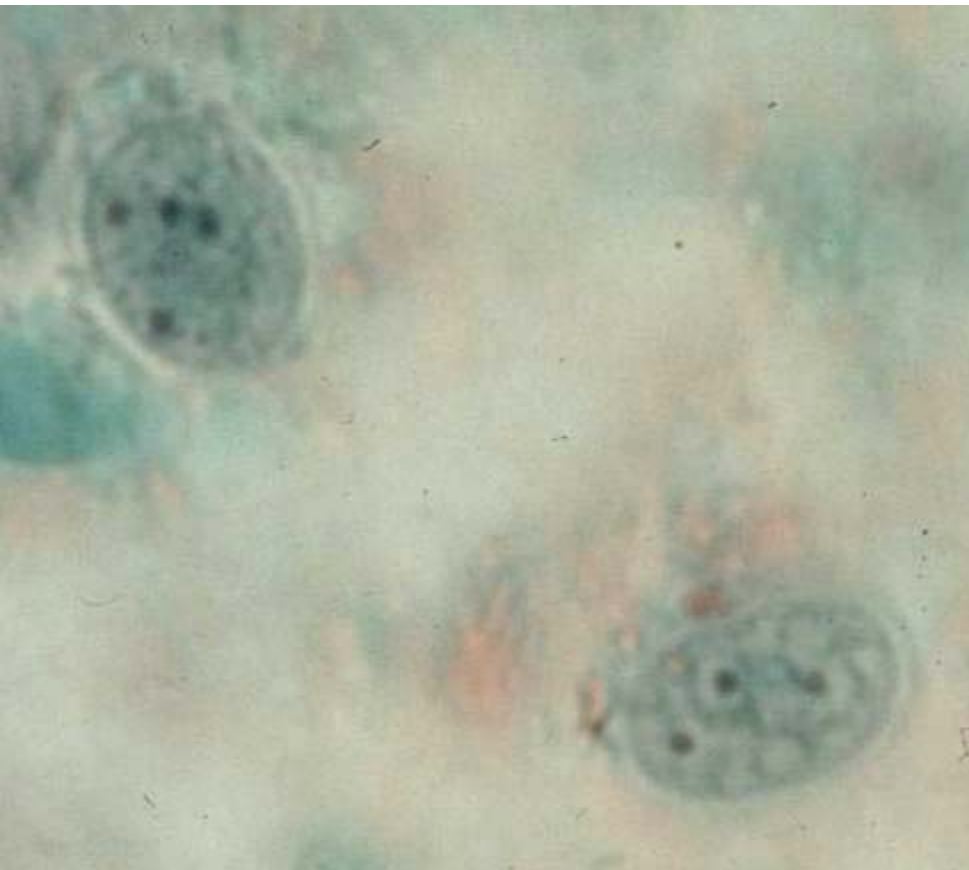
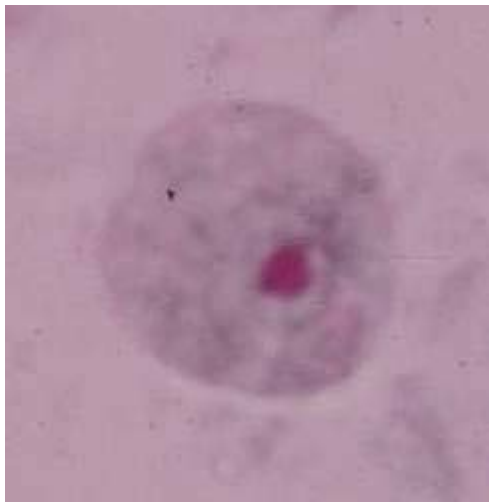
- identical morphology as *E. histolytica*
- free-living (sewerage)
- cultured at 24°

Ali et al, 2003, EID (May issue)

- **109 stool samples from school children in Bangladesh analyzed by PCR**
- **16% positive of *E. histolytica***
- **36% positive for *E. dispar***
- **21% positive for *E. moshkovskii***
 - **74% of these co-infected with *E.h.* or *E.d.***

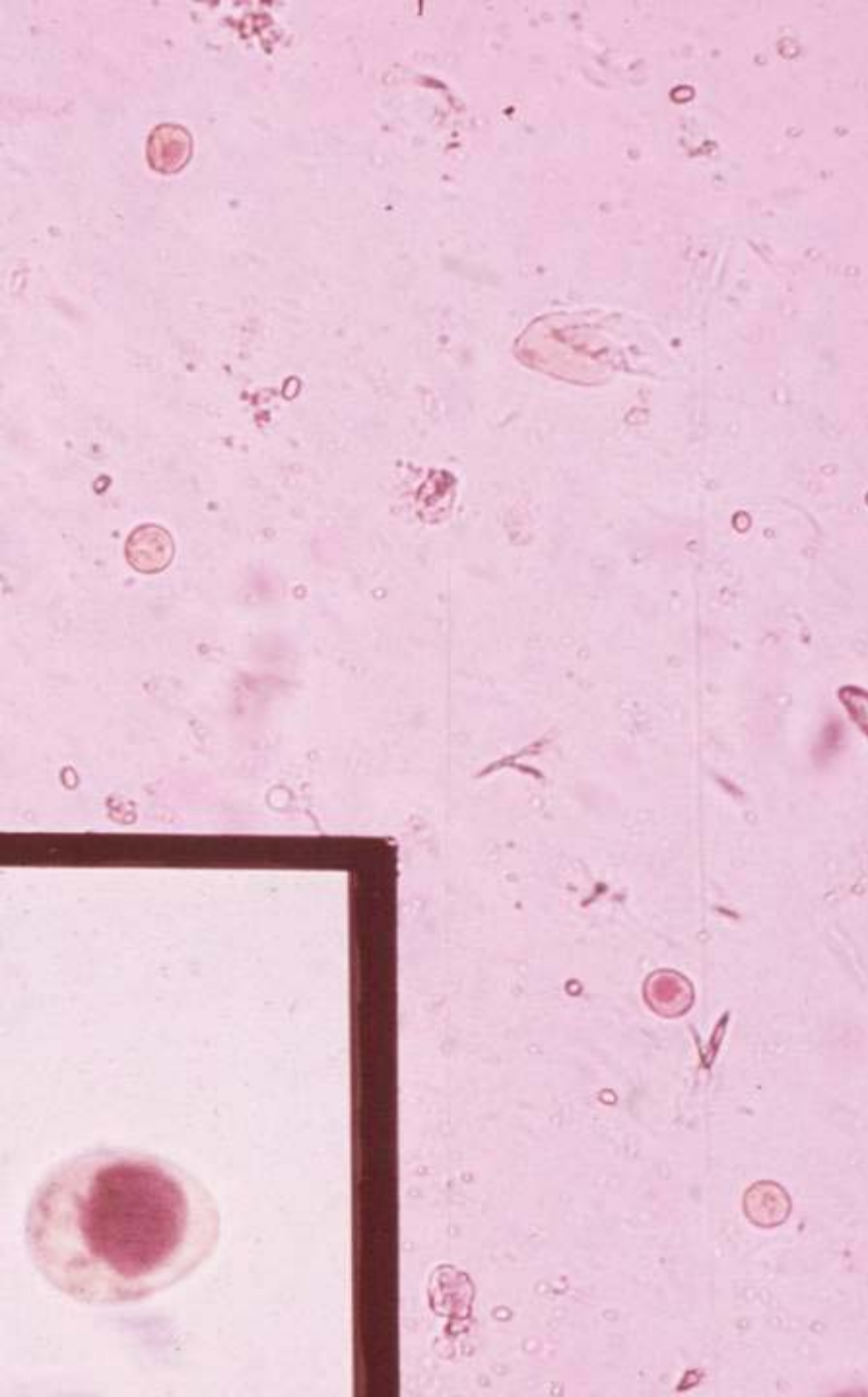
Endolimax nana

- **cysts**
 - 6-8 μm
 - 4 nuclei
- **trophozoites**
 - 8-10 μm
- **nuclear structure**
 - no peripheral chromatin
 - large karyosome

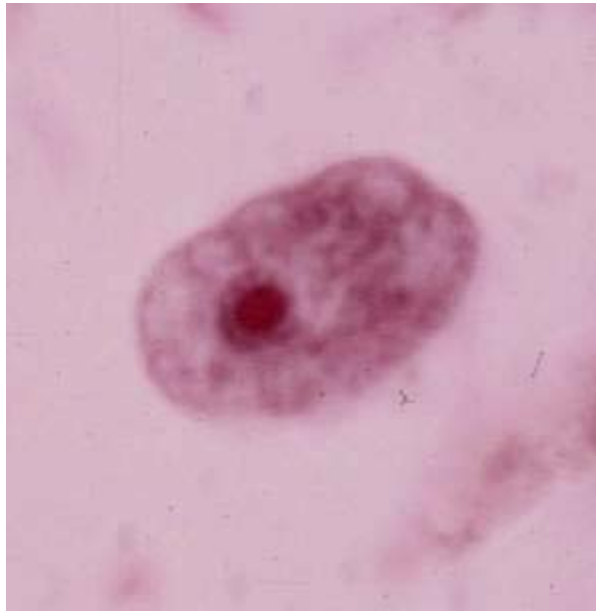
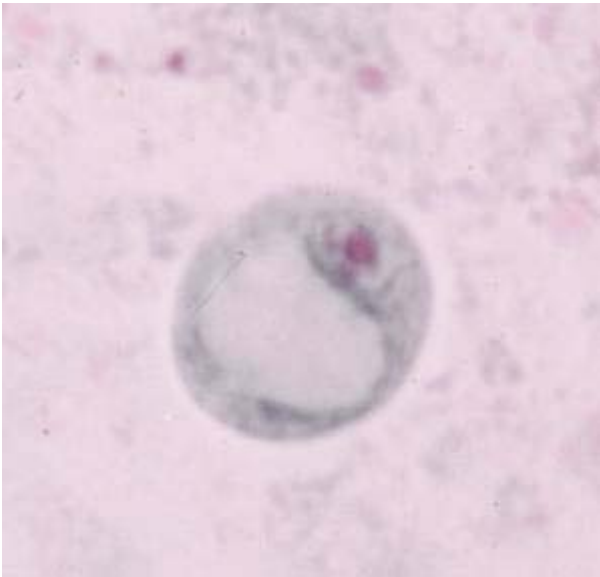


Iodamoeba bütschlii

- **cysts**
 - 10-12 μm
 - 1 nucleus
 - glycogen vacuole
- **trophozoites**
 - 12-15 μm
- **nuclear structure**
 - no peripheral chromatin
 - large karyosome



Iodamoeba bütschlii



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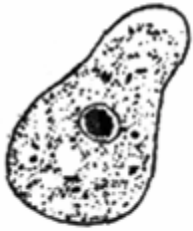






Dientamoeba fragilis



- no cyst stage
- trophozoites
 - 9-12 μm
 - often binucleated
- nuclear structure
 - no peripheral chromatin
 - fragmented karyosome

- related to trichomonads
- no flagella (basal bodies)
- 15-30% of infections associated with diarrhea

Intestinal Amebae

	<i>Entamoeba histolytica</i>	<i>Entamoeba hartmanni</i>	<i>Entamoeba coli</i>	<i>Endolimax nana</i>	<i>Iodamoeba butschlii</i>	<i>Dientamoeba fragilis</i>
trophozoite						
cyst						

Nuclear Morphology

Entamoeba histolytica



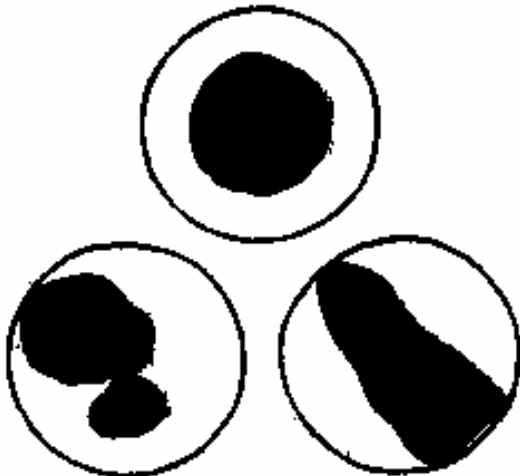
Entamoeba hartmanni



Entamoeba coli



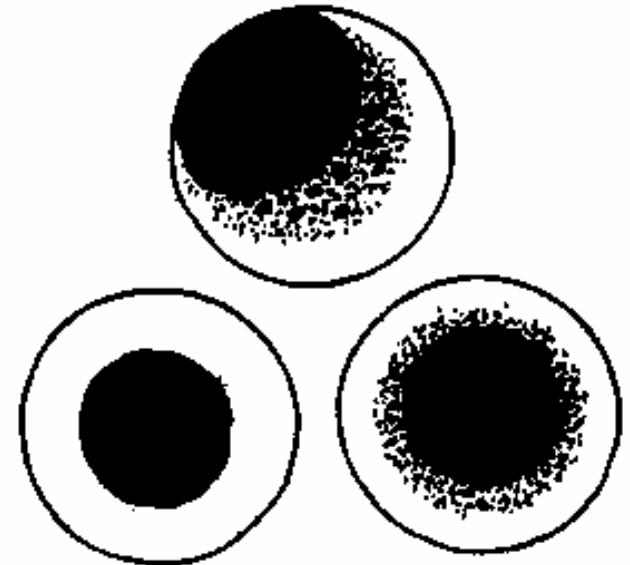
Endolimax nana

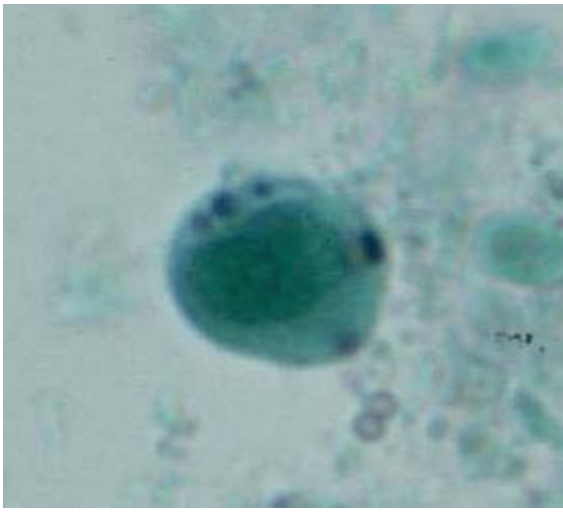


Dientamoeba fragilis



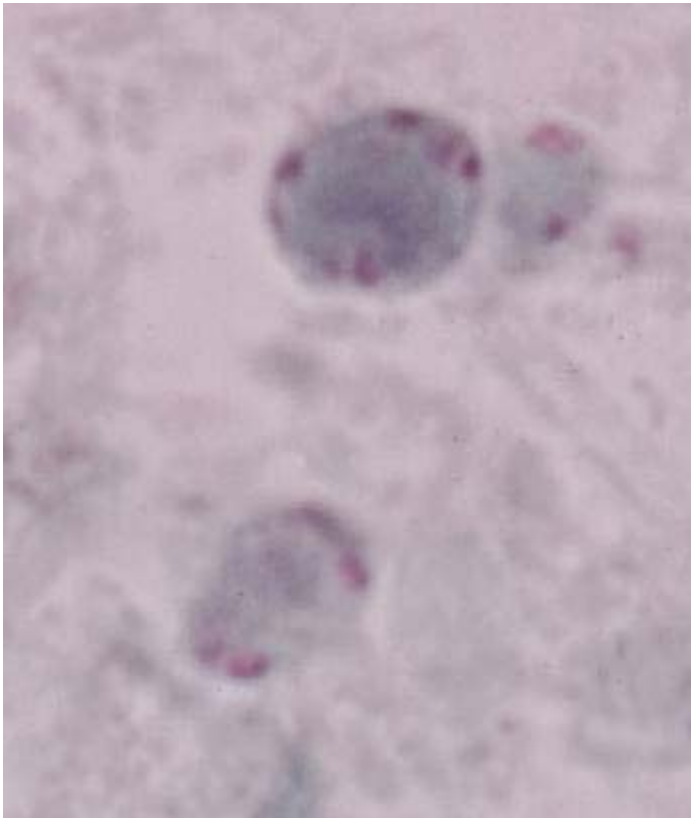
Iodamoeba butschlii





Blastocystis hominis

- life cycle unknown
- cysts?
 - 5-30 μm
 - granules (nuclei), especially at periphery
 - large vacuole
- previously called yeast, ameba, sporozoan, etc
- 16S rRNA = stramenopile
- stramenopiles include brown algae, diatoms, etc.
- pathology debated
 - GI symptoms
 - strain variations



Quiz--What is it?

