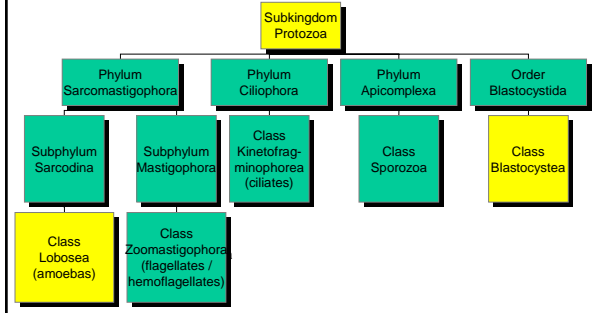


## Parasitology – Intestinal Amoeba

Student Lab  
Division of Medical Technology  
Carol Larson MEd, MT(ASCP)

## Classification - Protozoa



## Stools for O&P Examination

- Microscopic Examination
  - Direct examination – wet mounts
    - Saline prep
    - Iodine prep
  - Concentration procedure
  - Permanent staining procedure

## Stool Specimen

- Wet preps (direct and concentrate)
  - Saline (look for motility)
  - Iodine
  - Scan entire slide on 10x
  - Examine suspects on 40x
- Permanent stained smears
  - Scan on 40x
  - Examine suspects on 100x (oil)

## What to look for

- Size = 5-60  $\mu\text{m}$
- Shapes
  - Round, oval, oblong, pseudopods
- Internal structures
  - Nucleus (karyosome, peripheral chromatin)
  - Cytoplasm (vacuoles, chromatoid bars, inclusions such as RBCs and bacteria)

## What to look for

- Trophozoite
  - Motile on warm saline prep (fresh specimen)
  - Can contain bacteria, RBCs, food particles
  - Pseudopods
  - One nucleus

## What to look for

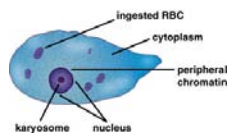
- Cyst
  - Chromatoid bars
  - Glycogen vacuoles
  - Inclusion mass
  - Cell wall is smooth and round
  - Can have more than one nucleus

## Identify Specific Amoeba

- *Entamoeba histolytica*
- *Entamoeba hartmanni*
- *Entamoeba coli*
- *Endolimax nana*
- *Iodamoeba bütschlii*
- *Blastocystis hominis*

## *Entamoeba histolytica* - Troph

- Motility
  - Progressive, rapid
- Nucleus
  - PC: fine, even
  - K: usually central
- Cytoplasm
  - Clean appearance
  - RBCs diagnostic

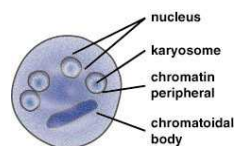


## *Entamoeba histolytica* - Troph

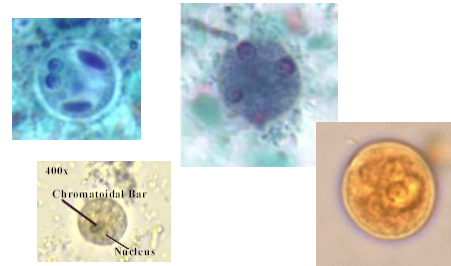


## *Entamoeba histolytica* - Cyst

- Nucleus
  - Mature = 4
  - PC: fine, even
  - K: usually central
- Cytoplasm
  - Chromatoid bars  
cigar-shaped  
rounded ends



## *Entamoeba histolytica* - Cyst

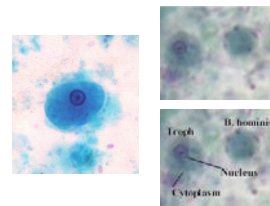


### *Entamoeba hartmanni* - Troph

- Motility
  - Non-progressive
- Nucleus
  - PC: fine, even
  - K: usually central
- Cytoplasm
  - Clean appearance
  - Bacteria, no RBCs

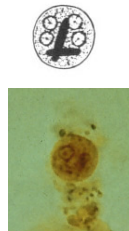


### *Entamoeba hartmanni* - Troph



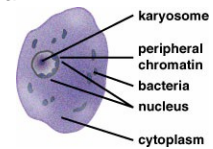
### *Entamoeba hartmanni* - Cyst

- Nucleus
  - Mature = 4
  - PC: fine, even
  - K: usually central
- Cytoplasm
  - Chromatoid bars  
cigar-shaped  
rounded ends

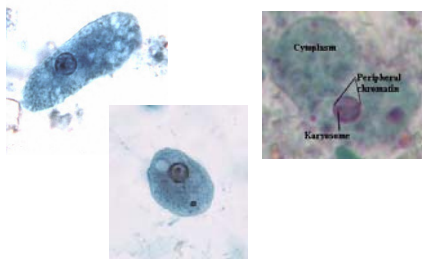


### *Entamoeba coli* - Troph

- Motility
  - Sluggish, non-directional
- Nucleus
  - PC: clumped, uneven
  - K: usually eccentric
- Cytoplasm
  - Dirty appearance
  - Bacteria, yeast, debris

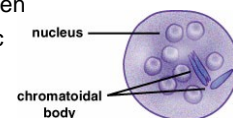


### *Entamoeba coli* - Troph

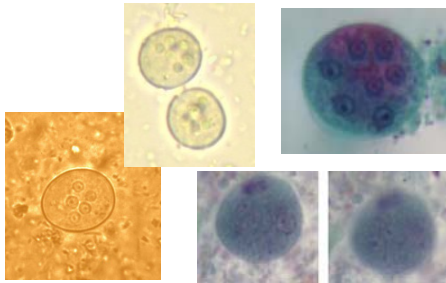


### *Entamoeba coli* - Cyst

- Nucleus
  - Mature = 8
  - PC: clumped, uneven
  - K: usually eccentric
- Cytoplasm
  - Chromatoid bars  
splinter shaped  
rough, pointed ends

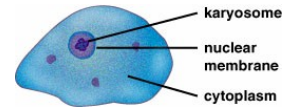


### *Entamoeba coli* - Cyst



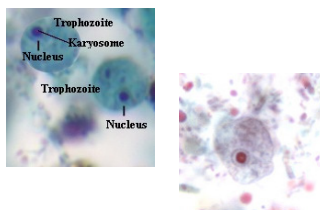
### *Endolimax nana* - Troph

- Motility
  - Sluggish, non-progressive
- Nucleus
  - PC: absent
  - K: large, blot-like, irregular



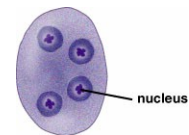
- Cytoplasm
  - Granular, vacuolated
  - Bacteria

### *Endolimax nana* - Troph

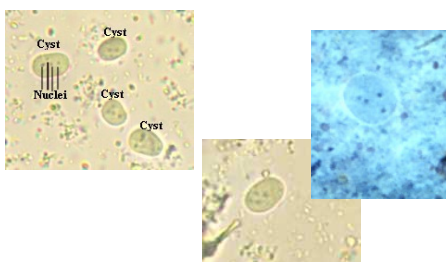


### *Endolimax nana* - Cyst

- Nucleus
  - Mature = 4
  - PC: absent
  - K: large, blot-like, irregular
- Cytoplasm
  - Granular, vacuolated

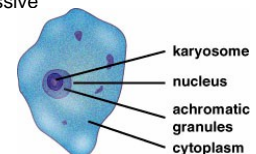


### *Endolimax nana* - Cyst



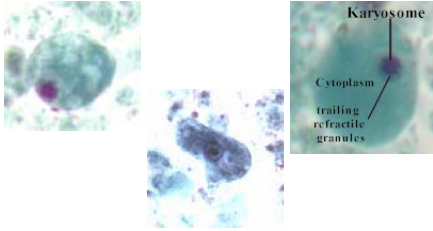
### *Iodamoeba bütschlii* - Troph

- Motility
  - Sluggish, non-progressive
- Nucleus
  - PC: absent
  - K: large, eccentric
  - Achromatic granules



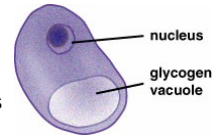
- Cytoplasm
  - Coarsely granular
  - Vacuolated, bacteria, yeast, debris

### *Iodamoeba bütschlii* - Troph

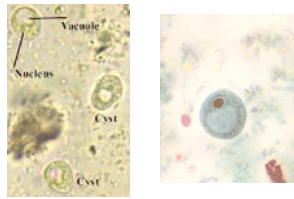


### *Iodamoeba bütschlii* - Cyst

- Nucleus
  - Mature = 1
  - PC: absent
  - K: large, eccentric
  - Achromatic granules
- Cytoplasm
  - Large glycogen vacuole

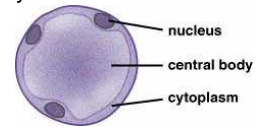


### *Iodamoeba bütschlii* - Cyst

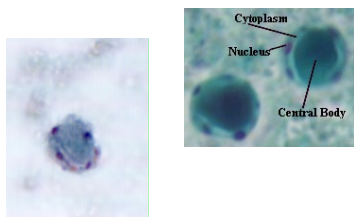


### *Blastocystis hominis* – Cyst-like

- Nucleus
  - 2-6 around periphery
- Cytoplasm
  - Ring around periphery of vacuole
- Large vacuole
  - Central body (90%)



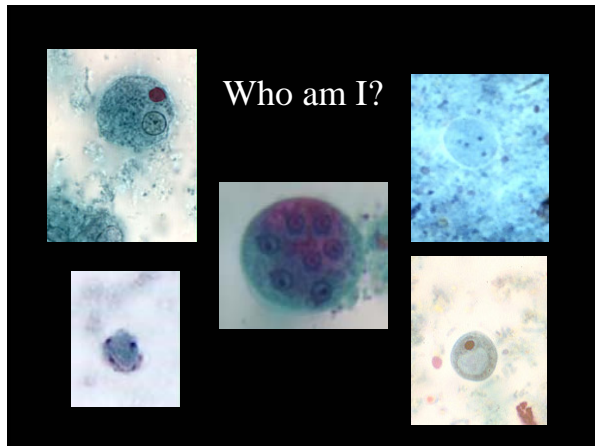
### *Blastocystis hominis* – Cyst-like



### Size Comparison

		AMEBAE						
		<i>Eutamoeba histolytica</i>	<i>Eutamoeba hartmanni</i>	<i>Entamoeba coli</i>	<i>Entamoeba polecki</i> <sup>1</sup>	<i>Endolimax nana</i>	<i>Iodamoeba bütschlii</i>	<i>Disentamoeba fragilis</i> <sup>2</sup>
Trophozoite								
Cyst							No cyst	

<sup>1</sup>Rare, probably of animal origin  
<sup>2</sup>Flagellate  
 Scale: 0 5 10 μm  
 Adapted from Brooks and Melvin, 1967



## Clinical Significance

- Amebic dysentery
  - *Entamoeba histolytica*
  - Infective form: cyst
  - Diarrhea
  - Differentiate from *Shigella* dysentery
- All other amoebas considered commensal and non-pathogenic

## In Summary ...

- Specimens
- What to look for
- Key characteristics of intestinal amoebas
- Clinical significance