

CILIATES (CILIOPHORA)

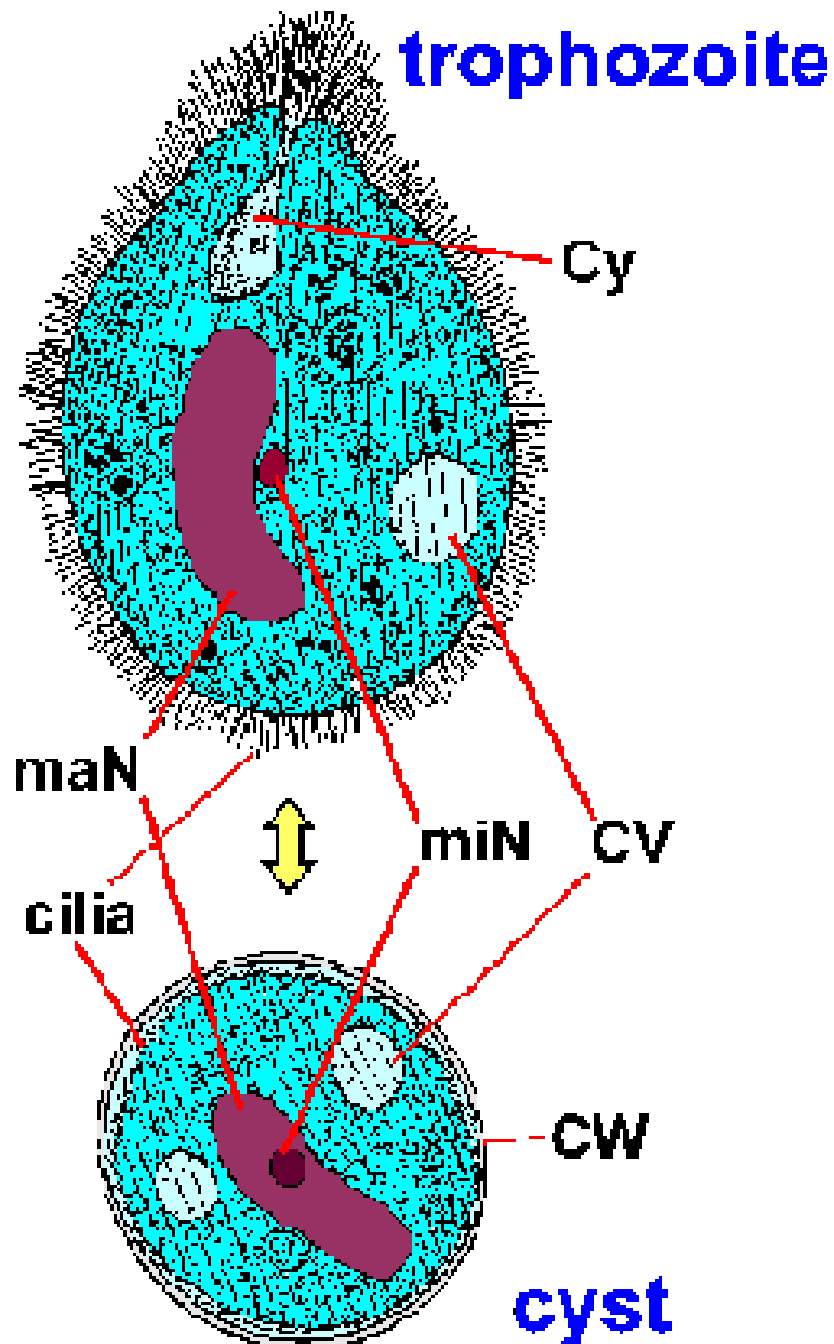
- **Large size Protozoans**
- **Covered by short hair-like organelles for motility**
- **Two distinct nuclei, macronucleus (somatic, "housekeeping") and micronucleus (germinal)**
- **Reproduction by binary fission but conjugation occurs (nuclear material exchanged between parasites)**

Balantidium coli

- **The largest and least common protozoan pathogen of humans**
- **Can cause severe life-threatening colitis**
- **Fatalities due to diagnostic imprecision**
- **Trophozoites and cysts forms**
- **Mostly found in pigs**

Morphology

- **Trophozoite**
 - Oval, 17 μ m long, 15 μ m wide
 - In pigs, some trophozoites can reach 200 μ m long
 - Cilia for movement in intestinal lumen
 - Cytostome (mouth)
 - 2 nuclei (macro, micro)
 - 2 contractile vacuoles/ food vacuoles
 - Multiplication by transverse fission but may be preceded by exchange of genetic material
- **Cyst**
 - Large, spherical, 60 μ m diameter
 - Can survive outside for weeks but destroyed if hot/dry



Balantidium coli

Cy	cytostome
maN	macronucleus
miN	micronucleus
CV	contractile vacuoles
CW	cell wall

Balantidium coli

Wet mount preparation

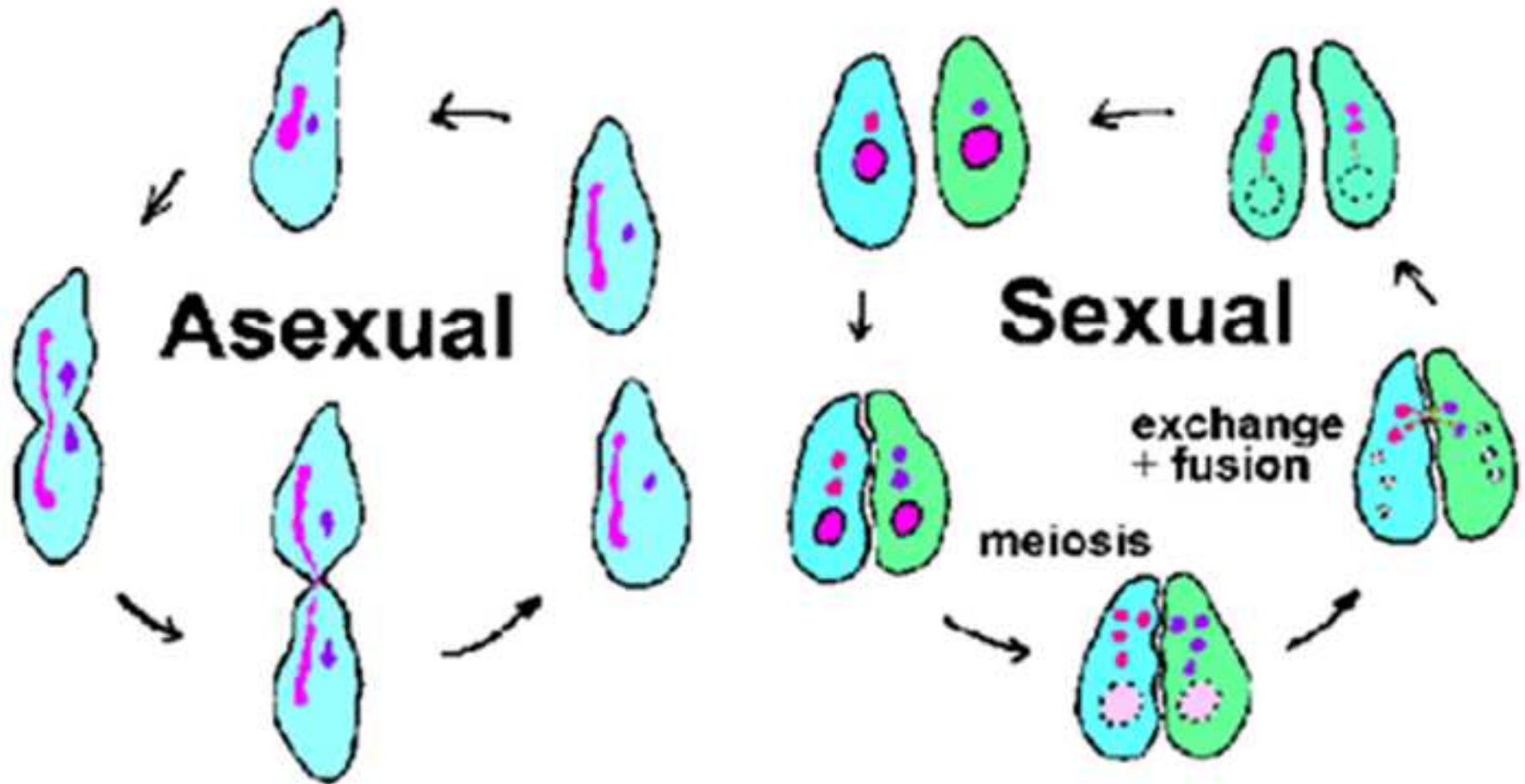


Balantidium coli

Cyst



Ciliates cycle



Epidemiology

- **Most commonly found in tropical countries**
- **Prevalence is usually low**
- **Found in many mammals (pigs, monkeys)**
- **Pigs appear to be an important reservoir (prevalence 40-90%)**
- **Communities living in association with pigs tend to have increased prevalence of disease**

Pathogenesis

- **Trophozoites can invade ileal & colonic mucosa to produce intense mucosal inflammation & ulceration**
- **Mechanisms not clearly understood. Trophozoites are probably able to penetrate the mucosa & sub-mucosa and maybe muscles of the colon.**
- **Invasion facilitated by enzyme hyaluronidase produced by *Balantidium***
- **Inflammation due to products liberated by the parasite and the recruitment of neutrophils**
- **Closely resembles amoebic colitis**

Clinical features

- Three forms of clinical presentation:

Asymptomatic carrier state



- Most common
- 80% of infections

Acute colitis

Acute fulminant colitis



- Diarrhoea with blood & mucus, nausea, abdo discomfort, weight loss
- Inflammatory changes
- Ulcerations
- Fever, prostration
- Death due to peritonitis or colonic perforation

Chronic infection



- Intermittent diarrhoea
- Occasional blood in stools
- Sometimes balantidial appendicitis

Diagnosis

- **Trophozoites in faeces**
- **Aspiration from ulcers (trophozoites)**
- **Value of serological tests not yet determined**
- **Macroscopic appearance (sigmoidoscopy) does not distinguish balantidiasis from other forms of inflammatory bowel diseases**

Management

- **Tetracycline**
- **Also sensitive to bacitracin, ampicillin, metronidazole, paromomycin**
- **Surgery in fulminant cases**