# Tikrit University

College of Nursing

Basic Nursing Sciences



**Second Year - 2023-2024** 

Microbiology (Balantdium coli)

by: assistant lecturer

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#### Balantdium coli

# Learning objec&ves:-

At the end of this lab the students should be able to:-

- 1. Describe the morphology forms of trophozoit and cyst of *Balantdium coli*.
- 2. Briefly describe the life cycle of Balantdium coli. .
- 3. Iden?fy the laboratory diagnosis of Balantdium coli.

#### Introduc&on

Balan?dium coli is the largest protozoan parasite in humans and causes a disease called balan?diasis. It belongs to the ciliophora phylum and is the only protozoan ciliate to infect humans x Pigs are its reservoir hosts (natural host), and humans become infected through direct or indirect contact with pigs (incidental .host)

## **Toxonomy**

Kingdom - Pro?sta

Phylum - Ciliophora

Class - Litostomatea

Order - ves?buliferida

Family – Balan?diidae

Genus \_ Balan?dium coli

### **MORPHOLOGY**

:the parasite is observed in two stages only which are

1-trophozoite (the invasive stage)

2 - Cyst (the infec?ve stag)

### :A – trophozoite

- Large Size
- ovoidal in shape.
- covered by cilia & the anterior end are longer than the posterior end.
- the anterior end is pointed and has a mouth call cytosome. the posterior end is rounded and has a cytopyge the internal structures:

A - have two nuclei, the macronucleus (the largest one) & micronucleus .(the smallest one)

,B - the macronucleus is kidney or bean in shape

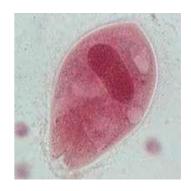
C - the micronucleus is small spherical shape located in the concavity of .macronucleus

.D - have two secretory contrac?le vacuoles

#### E - numerous food vacuoles



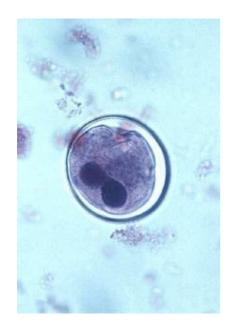




1-typically spherical in shape measuring 40-60 μm

- 2- .surrounded by a thick and transparent double layered wall
- 3-the macronucleus and micronucleus and contrac?le vacuoles are present in the .cyst the cilia are

4-undetectable -





#### LIFE CYCLE

Balan?dium coli has 2 developmental stages: a trophozoite stage and a cyst stage

\*The cyst is the infec?ve stage of Balan?um coli life cycle

Once the cyst is ingested via feces - contaminated food or water, it passes \*

.through the host diges?ve system

Excysta?on occurs in the small intes?ne

\*Excysta?on produces a trophozoite from the cyst stage \*

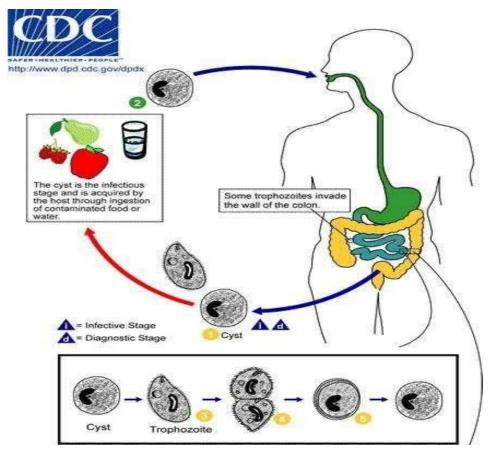
The mo?le trophozoite then resides in the lumen of the large intes?ne, feeding  $\ast$ 

.on intes?nal bacterial flora and intes?nal nutrients

Trophozoites mul?ply by asexual binary fission of sexual Conjuga?on (with the \* .exchange of nuclear material)

The trophozoite may become invasive and penetrate the mucosa of the large \*

.intes?ne, Trophozoites are released with the feces, and encyst to form new cysts Encysta?on takes place in the rectum of the host as feces are dehydrated or \* soon a]er the feces have been excreted. Cysts in the environment are then ready to infect another host



### LABORATORY DIAGNOSIS

Stool Examina?on: based on detec?on of trophozoites and cysts (Trophozoites in acutely infected pa?ent and cyste In chronic cases and carriers), trophozoites are .readily iden?fied because of their large size and covered with cilia

.biopsy: examina?on of scrapings of an ulcer

.<u>Culture</u>: can be cultured in all the media that support the growth of parasite