

## LAB 7 PATHOGENIC BACTERIA AND PROTISTS

### Objectives:

- To become familiar with the characteristics of some pathogenic bacteria and protists.
- To identify these pathogens based on visual inspection of prepared slides.

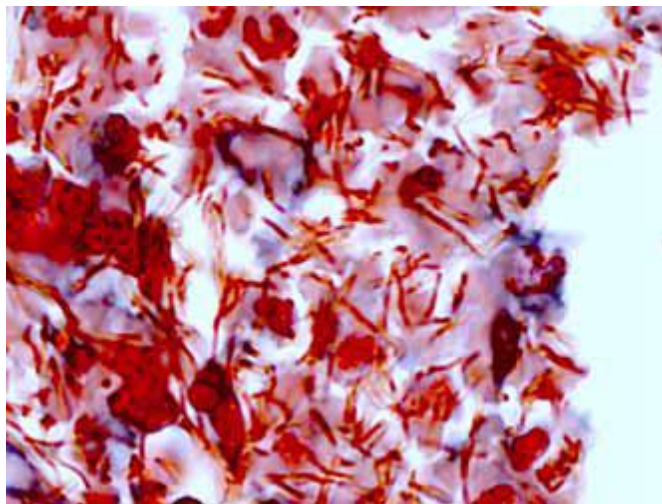
### Materials and Methods:

Recall from lecture that protists are **eukaryotes** (they have a nucleus and organelles). Bacteria are **prokaryotes**, lacking a nucleus and organelles. Bacteria are also much smaller than protists!

Examine the prepared slides of the following pathogenic bacteria and protists.

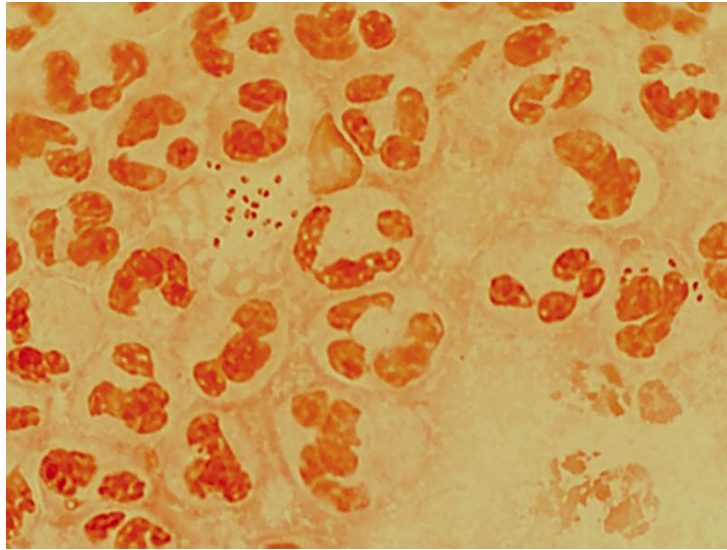
### PATHOGENIC BACTERIA:

#### *Bacillus anthracis*



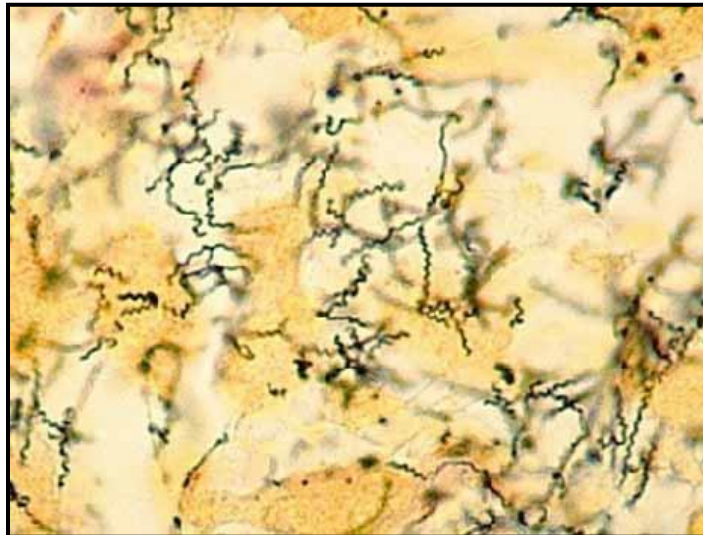
The red-stained, rod-shaped *Bacillus anthracis* bacteria in this mouse lung tissue cause anthrax, a respiratory disease. It can also cause gastrointestinal and cutaneous (skin) infections.

*Neisseria gonorrhoeae*



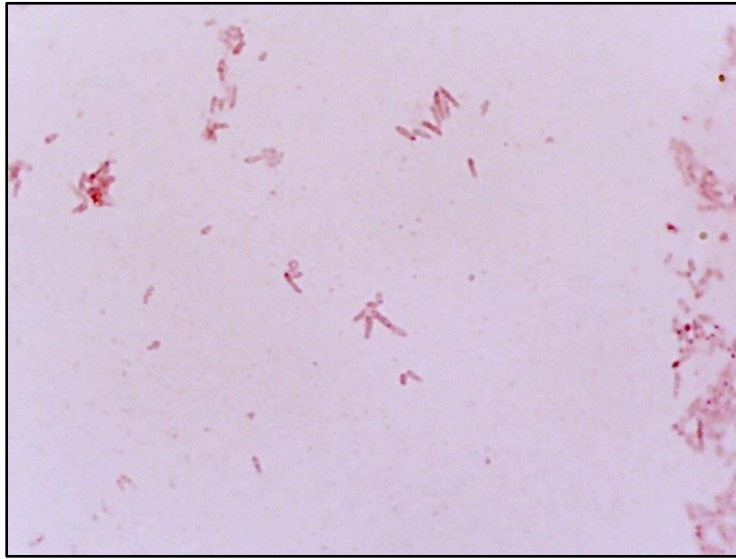
*Neisseria gonorrhoeae* (small, Gram-negative diplococci) bacteria in a pus smear. These bacteria cause the sexually-transmitted disease **gonorrhea**. The large cells with lobed nuclei are white blood cells.

*Treponema pallidum*



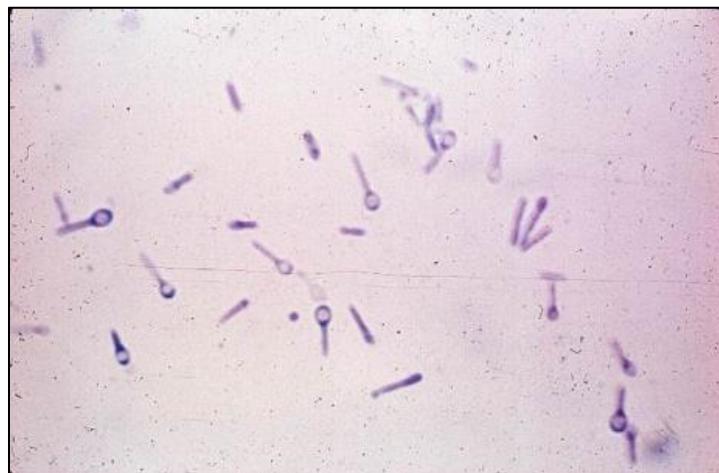
*Treponema pallidum* (spiral-shaped) bacteria in a smear. These bacteria cause the sexually-transmitted disease **sypilis**.

*Corynebacterium diphtheriae*



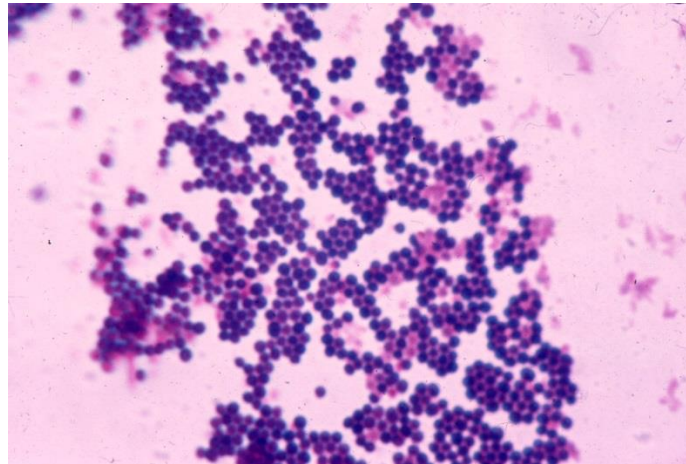
*Corynebacterium diphtheriae* (Gram-positive bacilli in “kanji characters”). These bacteria cause the respiratory disease **diphtheria**.

*Clostridium*



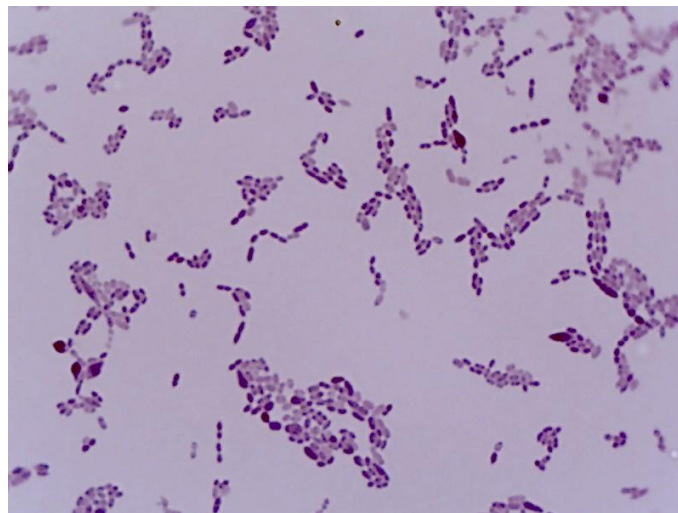
*Clostridium* (Gram-positive bacilli with endospores) bacteria. These bacteria cause diseases such as **tetanus**, **botulism**, **gas gangrene**, and “**Cdiff**.” The round, hollow structures are endospores.

*Staphylococcus aureus*



*Staphylococcus aureus* (small, Gram-positive staphylococci, or cocci in clusters). These bacteria cause diseases such as **MRSA**, **toxic shock syndrome**, and **abscesses**.

*Streptococcus pneumoniae*



*Streptococcus pneumoniae* (small, Gram-positive streptococci, or cocci in chains). These bacteria cause the respiratory disease **pneumonia**.



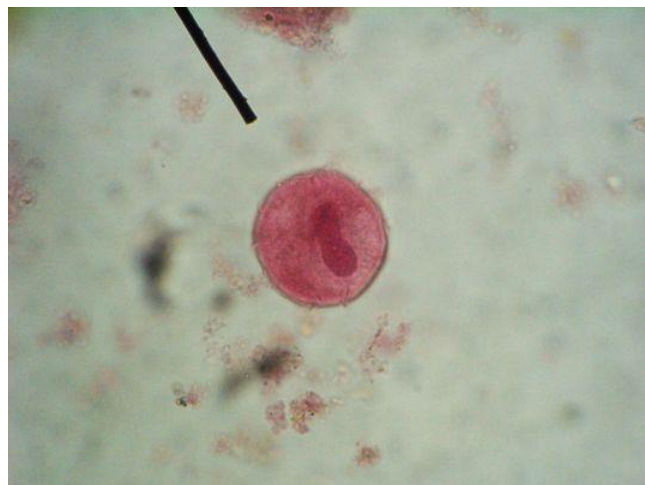
## PATHOGENIC PROTISTS:

### *Entamoeba histolytica*



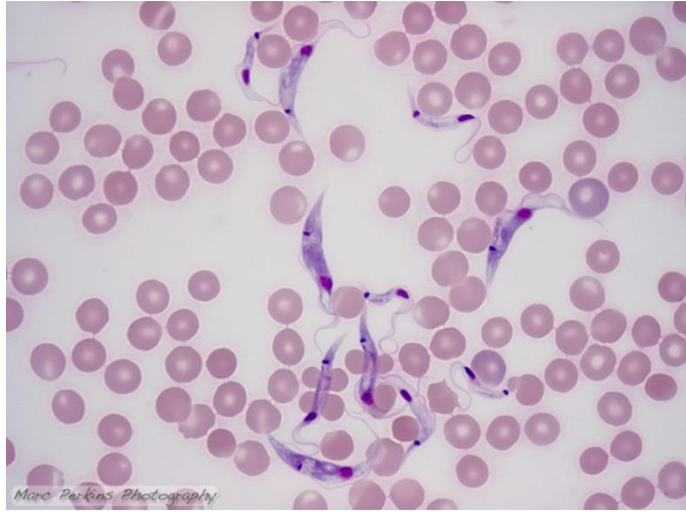
A cyst (dormant, protective structure) of *Entamoeba histolytica* in a fecal smear. This protist lives within the gastrointestinal tract of animals and can cause **amoebiasis**, or **amoebic dysentery** (diarrhea with blood) in people. The cysts are accidentally consumed in contaminated water or food, and then “hatch” within the gut and reproduce.

### *Balantidium coli*



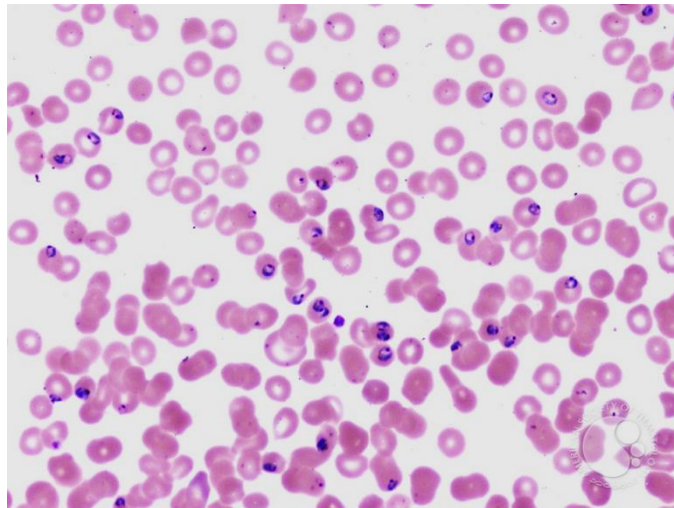
Active *Balantidium coli* (left) and its dormant cyst in a fecal smear (right). This protist lives within the gastrointestinal tract of animals and can cause **balantidiosis**, or **balantidial dysentery** (diarrhea with blood) in people. The cysts are accidentally consumed in contaminated water or food, and then “hatch” in the gut and reproduce.

### *Trypanosoma*



*Trypanosoma* in a blood smear. This protist lives within the bloodstream of infected animals and can cause **trypanosomiasis** (**Sleeping Sickness** in Africa, and **Chagas' Disease** in the Americas) in people. The parasite is spread by an insect bite (**tsetse flies** in Africa, and **kissing bugs** in the Americas).

### *Plasmodium*



*Plasmodium* in a blood smear. This protist lives within the bloodstream of infected animals and can cause **malaria** in people. The parasite is spread by the bite of the *Anopheles* mosquito.