

Date:- 22.08.2021

Practical name:- Observe Prokaryotic and Eukaryotic cells under light microscope

Objective:- To gain more experience using the microscope .

To explore cell structure in prokaryotes and eukaryotes.

To learn how to focus the microscope.

Abstract:- Cells are fundamental unit of all life. There are two types and they are Eukaryotic and Prokaryotic. Prokaryotes are organisms that consist of a single Prokaryotic cell. Eukaryotic cells are found in plants, fungi, and protists. Here I introduce both of cells and that how to observe bacteria and cheek cell. I discuss similar and different of that both cells.

Introduction:-

Cells are fundamental unit of all life. These fundamental units can be divide in to two classes of organisms called Prokaryotes and Eukaryotes. Each of these two classifications of cells will have different size and functions allocated to them.

Prokaryotic cells are the first living known organism have much simple structure. It composed of strands of chromosome and covered by cell wall known as peptidoglycan. Where Eukaryotic cells are much more bigger and complex cell. It composed of nucleus and organelle which are covered by plasma membrane.

Prokaryote are the oldest known life forms, having existed for the last 3.5 billion years. Microscope in size, they are single celled organisms. Prokaryotes are the largest group of organism and they unicellular organisms thar are found in all environments. Prokaryotes do not have a nuclear membrane. Their circular shaped genetic material dispersed thought cytoplasm. Prokaryotes split into two lineages known as Archie and Bacteria. The bacteria are more numerous than the Archie. Prokaryotes have different shapes, the most common shapes are spherical, bacillus and spiral.

Eukaryotic cells appeared approximately one billion years ago. Eukaryotes are generally more advanced than prokaryotes. A eukaryotic is an organism whose cells contain complex structures enclosed within membranes. Eukaryotic cells have an organized nucleus with a nucleus envelope. They have a brain for the cell. They have a discreet are where they keep their DNA. It is also said that they have a true nucleus. Although limited in size, eukaryotic cells can get very large. All plants, animals, fungi and Protista are eukaryotic cells.

Material and methods:-

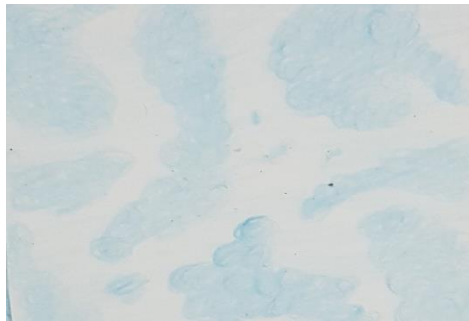
Observing prokaryotic cell (Bacteria)

Materials:- A microscope, Glass microscope slides, cover slips, Yogurt sample, tweezers, water dropper bottle tissues, Methylene blue solution, pencil, paper, Eraser, Water

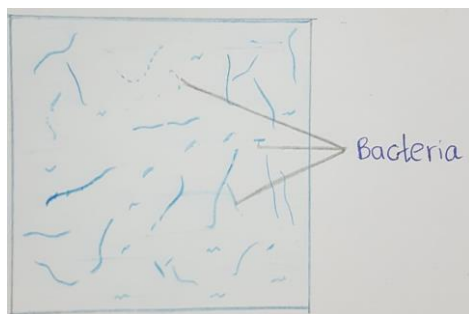
Methods / Steps:-

1. The staining process will also require the use of heat and methylene blue stain
2. Placed a drop of dilute yogurt solution on the microscope slide and did spread it to form a thin smear.
3. Allowed the slide to dry in air to form a thin film.
4. Quickly passed the slide three times above the flame to fix the bacteria.
5. Allowed the slide to cool to room temperature.
6. Added a drop of methylene blue stain on the film and allowed it to settle for about 2 minutes.
7. Gently rinse exceeded stain in a beaker of water.
8. Placed a cover slip on the film and observed under the microscope starting with low magnification.
9. After observed specimen with high magnification.

Observations:-



Cross section of a bacteria cell (40X magnification)



Cross section of a bacteria cell (1000X magnification)

Observing Eukaryotic cell (Cheek cell)

Material:- A microscope, cover slips, Toothpicks, Cheek cells, Methylene blue, glass microscope slides, paper towel, water, pencil, paper, Eraser, water dropper bottle

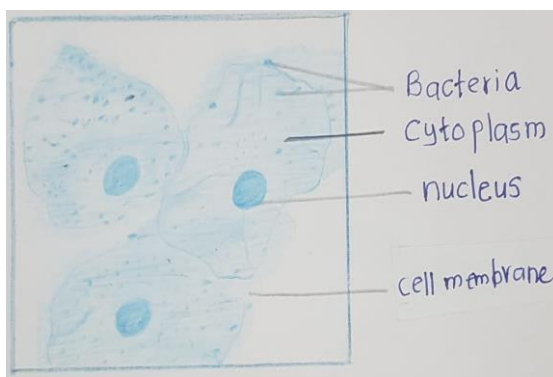
Method:-

1. Gently scrapped the inner side of the cheek using a toothpick, which collected some cheek cells.
2. Placed the cells on a glass slide that has water on it.
3. Mixed the water and the cheek cells using a needle and did spread them.
4. Took a few drops of methylene blue solution using a dropper and add this to the mixture on the slide.
5. After 2 or 3 minutes removed any excess water and stain from the slide using a blotting paper.
6. Took a few drops of glycerin using a dropper and add this to the test mixture.
7. Took a clean cover slip and lower it carefully on the mixture with the aid of a needle.
8. Using a brush and needle, pressed the cover slip gently to spread the epithelial cells.
9. Removed any extra liquid around the cover slip using a blotting paper.
10. Placed this glass side on the stage of the compound microscope and observed at low magnification and high magnification.

Observations:-



Cross section of a typical cheek cell (100X Magnification)



Cross section of a typical cheek cell (400X magnification)

Discussion:-

- Methylene blue is used to observe human cheek cell because the stain make the cells appear more clearly and the nucleus pops so the cell is easier to see as the nucleus. Cells are transparent.
- Like most eukaryotic cells, this is very large compared to prokaryotic cells.
- There is no cell wall in the cheek cells because cell walls prevent specialization and individual animal cells do not need protection from the out side environment.
- Used cotton swabs and cotton towel should be safely discarded in the trash and not left lying on the working table.
- Methylene blue is used to observe bacteria because the stain make the cells appear more clearly and to abstract easily .
- Cells are fixed before staining cells because the structure in cells would be fall apart and diffuse away before had a chance to finish the antibody incubations.
- Both of cheek cell and bacteria cell have a cytoplasm and a cell membrane.
- The bacteria cell is missing a separate nucleus and nucleolus. Bacteria also contain small circle of DNA called plasmids.
- The cheek cell contains membrane bound organelles, a nucleus and nucleolus.

Reference :-

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