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LAB: COMPARISON OF CHEEK AND ONION CELLS

INTRODUCTION:

In this lab, students use microscopes to compare and contrast plant (onion) and animal (human cheek) cells

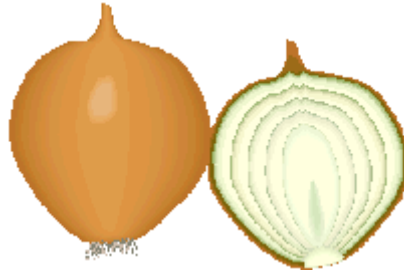
OBJECTIVES:

By the end of this exercise, you should be able to...

- ⊕ explain how the cell is the basic unit for all living things.
- ⊕ state characteristics of living things.
- ⊕ prepare a wet mount of onion cells and a human cheek cells.
- ⊕ explain the importance of biological stains for microscope observations.
- ⊕ diagram onion cells and label the cell wall, cell membrane, cytoplasm, nucleus, and chloroplast.
- ⊕ measure the length and width of onion cells in micrometers.
- ⊕ diagram human cheek cells and label the cell membrane, cytoplasm, and nucleus.
- ⊕ measure the diameter of human cheek cells in micrometers.
- ⊕ compare and contrast cheek (animal) cells with onion (plant) cells.



PROCEDURE PART A: ONION (PLANT) CELLS



1. Place a drop of water in the center of a clean glass slide.
2. Remove one of the fleshy leaves from a piece of onion. Bend the piece of onion against the curve until it snaps. With forceps, carefully remove the thin layer of epidermis from inside the curved piece of onion. The piece that you remove should be as thin and flexible as plastic wrap.
3. Spread the epidermis on the drop of water as smoothly as possible. If the epidermis becomes folded on the slide, use a probe to gently flatten and unfold it.
4. Place a drop of methylene blue stain on the piece of onion. Now gently lower the coverslip.
5. Focus the slide under the lowest power. Diagram what you see in the data table. Include the total magnification and label the cell wall, cell membrane, nucleus, cytoplasm, and chloroplast. Also, write a description of the general shape of the onion cell and a description of the nucleus inside of the cell.
6. Do not move the slide, but switch to medium power and diagram what you see, and then repeat this process under high power.
7. Estimate the average length and width in micrometers of an onion cell, on low power and medium power.



PROCEDURE PART B: HUMAN CHEEK (ANIMAL) CELLS

1. Place a drop of water on a clean glass slide.
2. Gently rub a toothpick across the inner lining of your cheek, for 30-60 seconds.
3. Swish the toothpick in the drop of water and add a drop of methylene blue solution.
4. Focus the slide under low power. The cells will appear as transparent and grainy lumps. **If the light is too bright, you may need to adjust the diaphragm.** Move the slide around until you find a few isolated cells.
5. Diagram the cheek cells and label the cell membrane, nucleus, and cytoplasm. Remember to include the total magnification. Also, write a description of the cell.
6. Switch to medium power and diagram and label what you see. Repeat this step with high power.
7. Estimate the average diameter of human cheek cells, for low power and high power.



Onion Cell	Cheek Cell
Low power	
Medium power	
High power	

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Plant and animal Cells Questions

Answer the following questions and statements using complete sentences.

1. Explain the function of the chloroplast in plant cells and tell why animal cells do not have a chloroplast.
2. Explain the structure and function of the cell wall in plant cells.
3. Are animal cells and plant cells eukaryotic or prokaryotic? Explain your answer.
4. What structures (organelles), that you observed, do both plant and animal cells have?
5. What structures (organelles), that you observed, do plant cells have that animal cells do not?
6. Compare the size and shape of both plant and animal cells.
7. Are bacteria cells eukaryotic or prokaryotic. Explain your answer.

Suggested vocabulary: You should be able to apply the following terms in your writing.

Eukaryotic cell
Cell membrane
Cytoplasm
Methylene blue

Prokaryotic cell
Cell wall
Nucleus
Photosynthesis

Organelle
Chloroplast
Wet mount
Chlorophyll