

How Animal Cells and Plant Cells Differ?

Background: Although animal and plant cells have many structures in common, they also have basic differences. Plants have a rigid cell wall, and if they are green, they also have chloroplasts. Animal cells lack both a cell wall and chloroplasts. Animal cells also lack the large, central vacuole common to plant cells.

You will observe and compare animal cells and plant cells. First, you will examine epithelial cells from your skin (cheek cells). Epithelium is a type of tissue that covers the surface of the body and lines many organs and cavities.

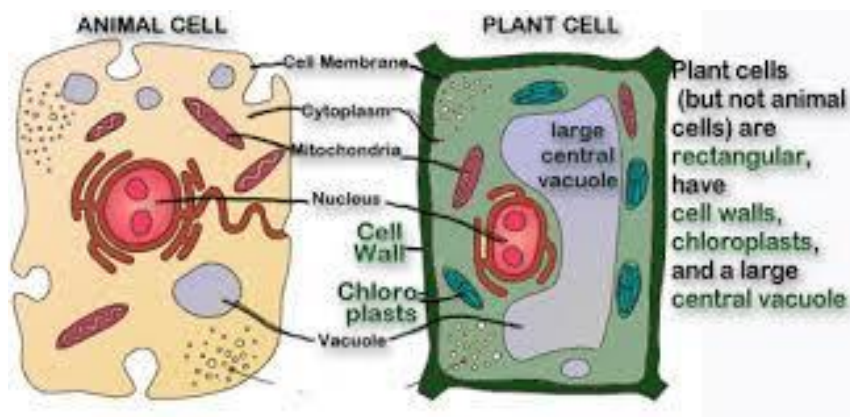
Second, you will examine cells from a leaf of the freshwater plant elodea. Elodea is often used in home fish tanks. The cells of this plant are green because they contain the pigment, chlorophyll. Chlorophyll, which is found in chloroplasts within each cell, enables plants to manufacture their own food.

Objectives:

- To observe the structure and characteristics of animal cells
- To observe the structure and characteristics of plant cells
- To describe the differences between animal cells and plant cells

Materials:

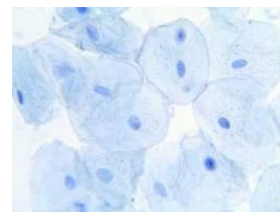
- Microscope
- Slides / coverslips
- Toothpick
- Cups / water/ pipettes
- Elodea leaf



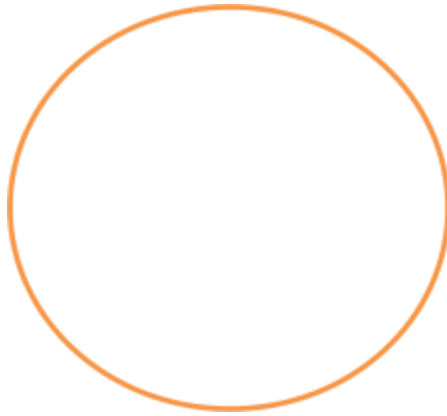
Procedure:

Part A: Observing Animal Cells

1. Place one drop of water onto a slide
2. With a clean toothpick, gently scrape the inside of your cheek to obtain cells
3. Stir the tip of the toothpick in the drop of water on the slide
4. Stir again and WRAP the toothpick in a paper towel
5. Gently lower the cover slip onto the slide at 45 degree angle, to reduce the amount of air bubbles
6. Place the slide onto the stage of the microscope. Find the cheek cells under lower power. Next, observe the cheek cells under high power.



7. In the space below, draw what you observe in the field of view under high power. **Be sure to label the organelles that are visible!**
(Label the cell membrane, cytoplasm, nucleus)



Q1. What is the highest magnification on the microscope?

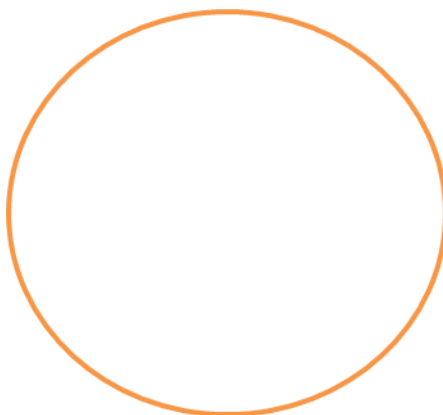
Q2. What is the shape of the cells you observed?
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Q3. What organelles are you able to observe?
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Part B: Observing Plant Cells



1. Break off a small leaf near the tip of the elodea plant. Make a wet mount slide by placing the leaf, unwrinkled, in a small drop of water on a glass slide.
2. Gently lower the cover slip onto the slide at a 45 degree angle, to reduce the amount of air bubbles.
3. Place the slide on the stage and examine the plant cells at lower power.
4. Next, observe the plant cells under high power. Carefully focus using the fine adjustment knob.
5. In the space below, draw what you observe in the field of view under high power. **Be sure to label the organelles that are visible!**
(Label the cell wall, chloroplasts, nucleus, and any other structures you may see)



Q4. What magnification are you observing the plant cells under?

Q5. Describe the shape of the plant cells

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Q6. What cell structures and organelles can you see?

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Q7. Were you able to identify the chloroplasts?

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Part C: Looking at Prepared Slides of Animal and Plant Cells:

Find two other examples of both plant and animal cells and draw them below. Label all the cell parts that you can see.

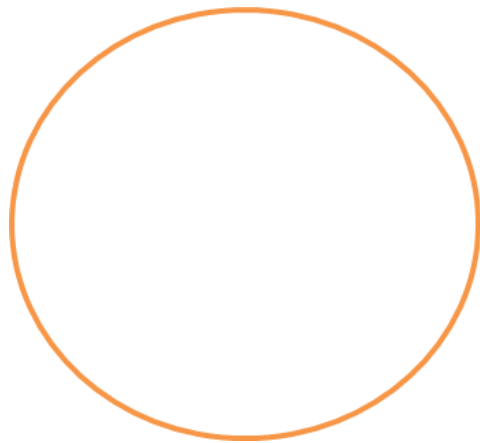
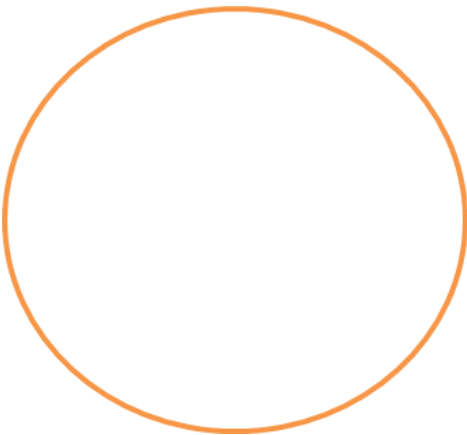
Plant Cells

Specimen: _____

Specimen: _____

Magnification: _____

Magnification: _____



Animal Cells

Specimen: _____

Specimen: _____

Magnification: _____

Magnification: _____



Conclusion Questions

1. What structures do human epithelial cells have in common with elodea cells?

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2. How does the **shape** of human epithelial cells differ from elodea cells?

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3. What cell organelles were you **able** to see with the high power on the microscope?.....

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4. What cell organelles were you **unable** to see with the high power of the microscope?.....

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5. Why do you think you were unable to see them?

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6. What is the function of the cell membrane?

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7. What is the function of the chloroplast?

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