Plant and Animal Cell Lab

**Lab:** Plant and Animal Cells

**Problem:** What are the differences between plant and animal cells?

**Background:**

1. Use your textbook and/or notes to create a comparison chart between plant and animal cells.
2. In 1665, Robert Hooke, an English Scientist, reported an interesting observation while looking through his microscope at cork.
	1. What did Hooke call the units he was looking at?
	2. Why did he name these units this?
	3. Is cork produced by a plant or animal?
	4. Do animals have cell walls?
	5. Look up the name of the carbohydrate which makes up the cell wall.

**Hypothesis:** If *Elodea* (a water plant) cells, onion cells and human skin cells are viewed under the microscope, then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Materials:** *Elodea* sprigs, onion section, cellophane tape, methylene blue, microscope, slides, coverslips, forceps, small beakers of water, droppers

**Procedure One:**

1. Break off a small leaf from the tip of the Elodea sprig. Place the leaf on a slide. Cover it with a coverslip and add water drops on each side. Examine the leaf under low power. Find and focus on some cells near the edge of the leaf. Focus on those leaves using high power.
2. **a. Draw at** **least three** Elodea cells that you see using high power. Label your drawing with the magnification. (**Hint**: *Total magnification = Power of ocular x Power of the objective*).
3. Using your textbook **label the cell wall, cell membrane, cytoplasm, and chloroplasts.**

 Elodea cells

 Magnification: \_\_\_x

1. Is elodea a plant or animal cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Is a cell wall present? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Describe the shape of the Elodea cell. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Describe the color of the chloroplast.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. What is the function of chloroplasts? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Procedure Two:**

1. Peel apart two onion sections. Carefully peel the clear membrane from between the layers. Place this thin membrane on a slide. Put a drop of iodine on it and cover it with a coverslip. Focus the slide under low power, then high power.
2. **A. Draw at least three** onion cells that you see using high power. Label your drawing with the magnification.
3. Using your textbook or a cell diagram on a transparency, **label the cell wall, cell membrane, the cytoplasm, the nucleus, and the nucleolus**

 Onion cells

 Magnification: \_\_\_x

1. Describe the shape of an onion cell. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Are onion cells produced by plants or animals? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Is a cell wall present? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Describe the shape of the nucleus of an onion cell. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. What is the function of a cell’s nucleus? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. What structure separates the contents of the nucleus from the cytoplasm?

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**Procedure Three:**

1. Place a small drop of water in the middle of a clean slide. Using a toothpick, gently scrape the inside of your cheek. Carefully, stir the toothpick in the drop of water on your slide. Add a small drop of iodine to the drop of water on the slide. Cover with a coverslip.
2. **A. Draw at least three human epidermis** (skin) cells that you see using high power. Label your drawing with the magnification.

**B.** Using your textbook or a cell diagram on a transparency, **label cell membrane, nucleus, and cytoplasm.**

 Human epidermis cells

 Magnification \_\_\_x

1. Describe the shape of the cheek cell.

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1. Are cheek cells produced by plants or animals?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Is a cell wall present?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Describe the location of the cell membrane.

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**Analysis:**

|  |  |  |  |
| --- | --- | --- | --- |
| Cell parts | Plant cells only | Animal cells only | Both Plant and Animal cells |
| Cell membrane |  |  |  |
| Cell wall |  |  |  |
| Nucleus |  |  |  |
| Chloroplast |  |  |  |
| Cytoplasm |  |  |  |
| Vacuoles |  |  |  |

**Conclusion:**

How do plant cells differ from animal cells? Write a paragraph **(5-7 sentences)** to explain your answer.