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Mr. Willis  
Biology: \_\_\_\_\_  
Date: \_\_\_\_\_

Unit IV  
Biology – Cells  
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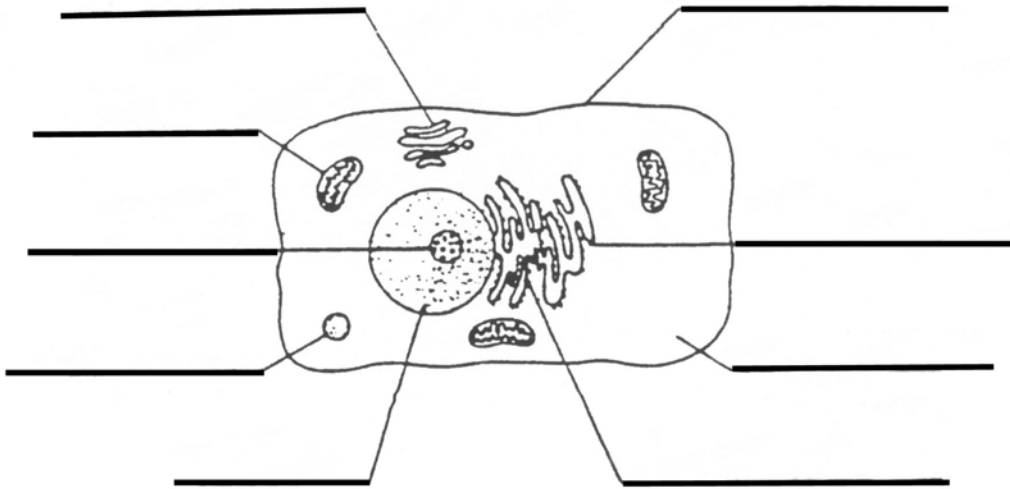
# IV

## Investigating Cells Using a Microscope

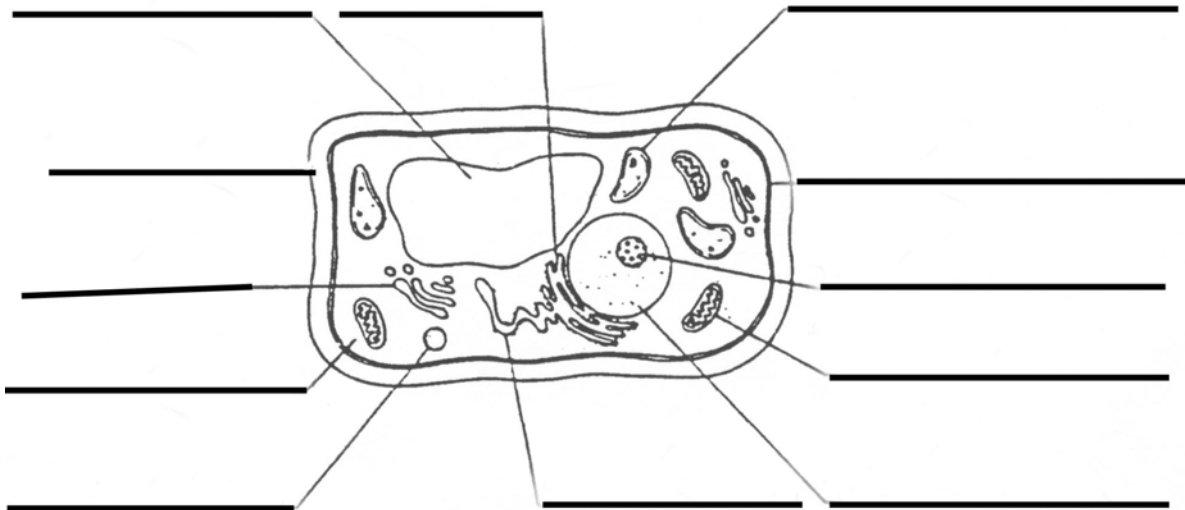
### Pre-Lab

Label the parts of the plant and animal cell drawings. Then state the major function of each labeled part on the chart. Answer questions 1-3.

**The Animal Cell** – Label the following: Golgi apparatus, lysosome, mitochondrion, endoplasmic reticulum, ribosome, nucleus, nucleolus, cytoplasm, and plasma membrane

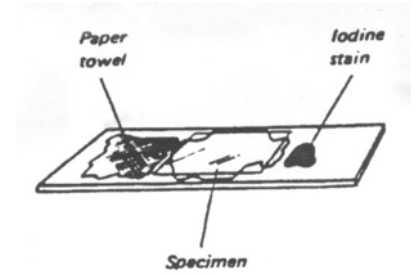


**The Plant Cell** – Label the following: mitochondrion, vacuole, Golgi apparatus, endoplasmic reticulum, ribosome, lysosome, nucleolus, nucleus, cell wall, chloroplast, cytoplasm, and plasma membrane

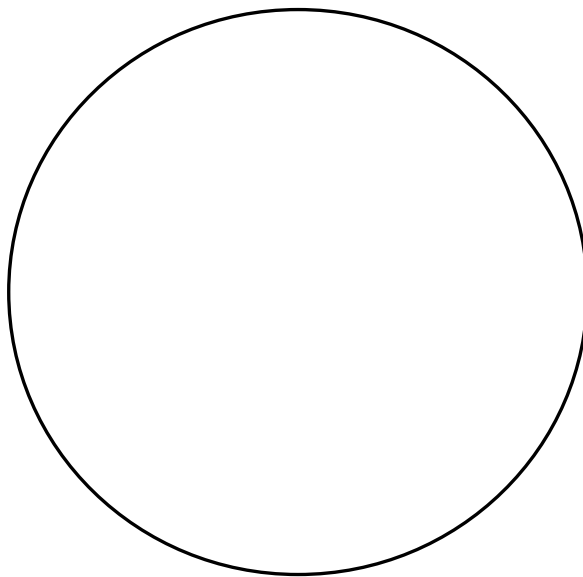




- e. Place a drop of iodine stain next to the coverslip of your slide
- f. Next, place a small piece of paper towel next to the coverslip on the side opposite the drop of iodine
- g. As the towel absorbs water, the iodine stain will be drawn under the coverslip
- h. Remove the paper towel once the stain has been drawn across the onion
- i. Observe under low power – pick out **one** good cell that shows the contents clearly – move it to the center of your field of view
- j. Now switch to high power and observe that cell
- k. **Draw** a sketch of the onion cell under high power. **Label** the parts of the cell on your sketch.
- l. **Calculate** the total magnification.



Magnification \_\_\_\_\_



7. When you add a drop of iodine, what effect does the stain have on the cells? \_\_\_\_\_

\_\_\_\_\_

8. What does the cytoplasm look like? \_\_\_\_\_

9. What do the nuclei look like? \_\_\_\_\_

10. What was the purpose of staining the cells? \_\_\_\_\_

11. What is found inside the nucleus? \_\_\_\_\_

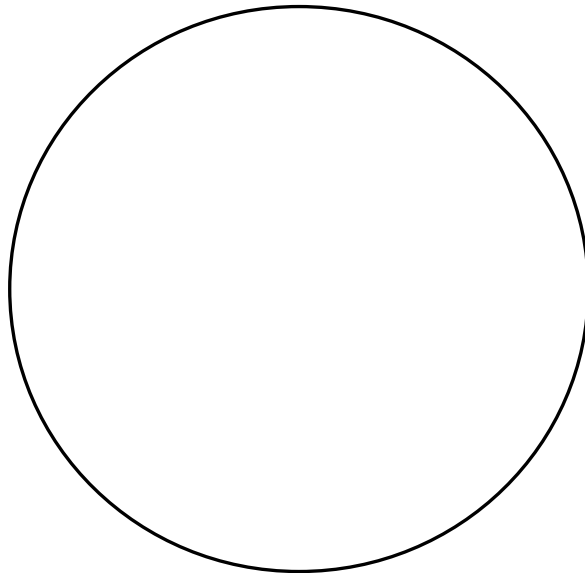
12. What structure separates the contents of the nucleus from the cytoplasm? \_\_\_\_\_

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**Lab Part II – The Elodea Cell**

- a. Prepare a wet mount of an Elodea leaf. The whole leaf should be used.
- b. Examine the leaf under low power of the microscope – pick a section of the leaf where the cells are very distinct – Center this section in the field of view.
- c. Switch to high power.
- d. Observe the small, oval, green bodies that appear in the cells. These are the chloroplasts. As you observe the chloroplasts, watch carefully for movement. It may require several minutes of observation.
- e. **Draw** a sketch of the Elodea cell under high power. **Label** the following parts: cell wall, chloroplasts, cytoplasm, and nucleus. Use arrows to show the direction of chloroplast movement.
- f. **Calculate** the total magnification.

Magnification \_\_\_\_\_



13. Note the oval, green bodies in the cells. These are the chloroplasts. Which direction are they moving? \_\_\_\_\_

14. Are all the chloroplasts moving in the same direction? \_\_\_\_\_ Are all the chloroplasts moving at the same speed? \_\_\_\_\_

15. What makes chloroplasts green? \_\_\_\_\_

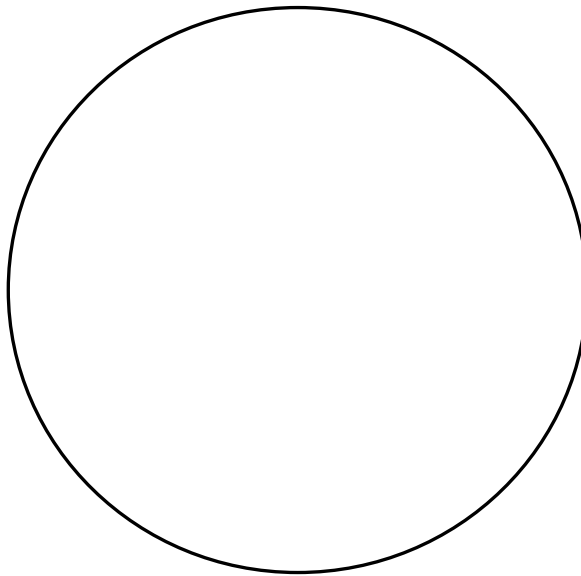
16. An Elodea leaf appears uniformly green to the eye. Is the green color distributed evenly throughout the cell or is it only in specific organelles? \_\_\_\_\_

17. Is Elodea a producer or consumer? \_\_\_\_\_

18. What is the function of the chloroplasts? \_\_\_\_\_

**Part III – The Cheek Cell**

- a. Gently scrape the inside of your cheek with the broad end of a clean toothpick. You should not be able to see any cells on the toothpick – remember they are microscopic.
- b. Prepare a wet mount slide – place the cheek cells on a small drop of water – do this by stirring the toothpick in the drop of water
- c. Put a drop of methylene blue on the end of a clean toothpick and stir into the water and cells on slide – repeat until light blue
- d. Add a coverslip
- e. Examine the cells under low power
- f. Switch to high power
- g. **Draw** a sketch of the cheek cell under high power. **Label** the following parts: plasma membrane, cytoplasm, and nucleus. Then **calculate** the total magnification.



Magnification\_\_\_\_\_

19. How does the outer edge of the cheek cells compare with the outer edge of the Elodea cells?

\_\_\_\_\_

20. What is this outer edge of the cell called? \_\_\_\_\_

21. Do cheek cells have cell walls? \_\_\_\_\_

22. Do cheek cells come from consumers or producers? \_\_\_\_\_

23. What are the differences between plant and animal cells? \_\_\_\_\_

\_\_\_\_\_

24. What is the basic unit of structure in all living things? \_\_\_\_\_