Name: _____ Period: _____ Date: _____

Honors Biology
Mr. Croft

Lab on Eukaryotes: Plants & Animals

50 Points

Purpose: To recognize the differences in structure between plant cells and animal cells.

Microscope #: _____ Field of Vision (mm): _____ Field of Vision (□m): _____

***CAUTION*: Both iodine and methylene blue are poisonous. These chemicals will also stain skin and clothing. Use caution and thoroughly wash anything that comes in contact with these chemicals.**

Part I: Plant Cells (Onion Epidermis)
The epidermis of the onion is ideal for study because it is composed of a single layer of cells.

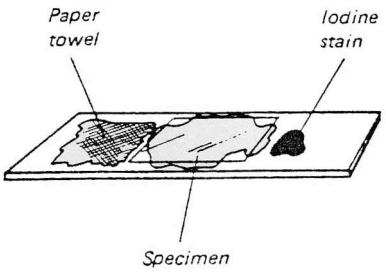
Procedure:
1. Remove the outer thick scale.
2. Peel off a small piece of the delicate transparent tissue.
3. Cut a small square of the tissue using a scalpel.
4. Place the square on a slide, add two drops of water, and place a cover glass on top.
5. Examine the slide under low power.

Questions:
1. What is the shape of the cells?

2. Are all the cells similar in shape?

3. What color is the cytoplasm?

Procedure (look at figure below):
6. Place a drop of iodine to the right of the cover glass.
7. Place a small piece of paper towel to the left of the cover glass.
8. As the towel absorbs water, the iodine stain will be drawn under the cover glass.
9. Absorb any excess iodine with a small piece of paper towel.
10. Examine the slide again under low power.



Questions:

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

5. Measure the length of an average-sized onion cell in micrometers using the technique from the previous microscope lab.

6. Measure the width of that onion cell in micrometers.

Procedure:

11. Select a cell that is clear, center it in the field of vision, and switch to high power.
12. Focus using the fine adjustment knob.
13. Rotate the fine adjustment back and forth to observe the cell at various depths.

Questions:

7. What is the appearance of the cytoplasm?

8. What is the appearance of the nuclei?

9. Are the nuclei always in the same position in the cell?

10. Does the onion epidermal cell appear to have depth? (are cells 3-D?) Explain.

11. Draw and label the entire field of vision under high power.

Part II: Animal Cells (Human Epithelial Cells)

Procedure:

1. GENTLY scrape the inside of your cheek with the wide end of a clean toothpick.
2. Roll the toothpick back and forth on a clean slide.
3. Add one drop of methylene blue.
4. Place a cover glass on the slide.
5. Examine the slide under low power.
6. Select a cell that is clear, center it in the field of vision, and switch to high power.
7. Focus using the fine adjustment knob.

Questions:

1. How does the outer edge of the cheek cells compare with the outer edge of the onion cells?

2. What is the outer edge of an animal cell called?

3. In what ways do the cheek cells differ from the onion cells?

4. Measure the diameter of the cheek cell in micrometers (under low power) using the technique from the previous microscope lab.

5. Draw and label the entire field of vision under high power.