

Lab 4: Cells

What do animal and plant cells look like?

Materials:

onion	iodine
slide	coverslip
microscope	toothpicks

Introduction

Cells are the basic functional units of all living organisms. They may exist singly or in aggregates. When cells join together to take on a specialized function within a larger organism, they form a tissue. Epithelial cells make up epithelial tissue. These cells form the skin of the outer body surfaces and the linings of the inner surfaces. These cells are specialized for protection. The individual cells of these layers may be shaped like cubes, columns, or be flat--depending on their location.

There are 2 major divisions into which all cells fall--prokaryotic (organized nucleus absent) and eukaryotic (organized nucleus present). Bacteria make up the former division while the cells of plants, animals, fungi, protozoa, and algae comprise the latter.

Animal and plant cells share many characteristics, which you will observe in this lab. They also differ in several important ways. In this lab, you will use these similarities and differences to classify unknown specimens.

Label the picture of the plant and animal cell.

Procedure:

Part I: Plant Cells

Onion cells are organized tissue that, under the appropriate conditions, will give rise to an entire plant. The curved pieces that flake away from a slice of onion are called scales. On the underside of each scale is a thin membrane called the epidermis.

- A. Obtain a piece of onion and remove a small piece of epidermis. Prepare a wet mount as you did in Investigation 1. Use iodine for the liquid instead of water.
- B. Examine the epidermis first with the low power objective of your microscope, then the high power. Estimate the size of the cells that you are looking at; refer to Part II of Investigation 2 for your diameter of the field of views in microns. (Lab 1, question 15)

1. How many layers thick is the epidermis?
2. What is the general shape and size of a typical cell?
3. What does the nucleus look like?
4. Make a diagram of **one cell** under high power. Label the following structures in **one cell**: nucleus, cell wall, cytoplasm, and size in microns.

Part II: Animal Cells

C. Use a toothpick and gently scrape your inside cheek surface. Smear this material onto your slide, add a drop of iodine, and a coverslip. Examine the cells under low and then high power.

5. Inside the mouth, these cells are joined together in a sheet. Why are they scattered here?
6. Draw **one** cell and label: cell membrane, nucleus, cytoplasm, and size in microns.

Postlab Analysis:

7. What did you **observe** in plant cells but not in animal cells. (this means a cell structure)
8. In what observable ways are animal and plant cells structurally similar?
9. How are plant and animal cells different? (2 things)
10. How does the structure (shape) of the cells that you observed relate to the function of each type of cell?
11. How do the lysosomes of a cell function during the development of a baby's hand?