

# Animal and Plant Cells

All living things are made up of cells. While it is true that some living organisms, such as the ameba and paramecium, may be made up of only one cell, most plants and animals are multicellular. Cells which are similar in shape and function are usually found together joined as **tissues**. In this lab, you will examine samples of covering tissues of a plant (onion) and an animal (your cheek cells).

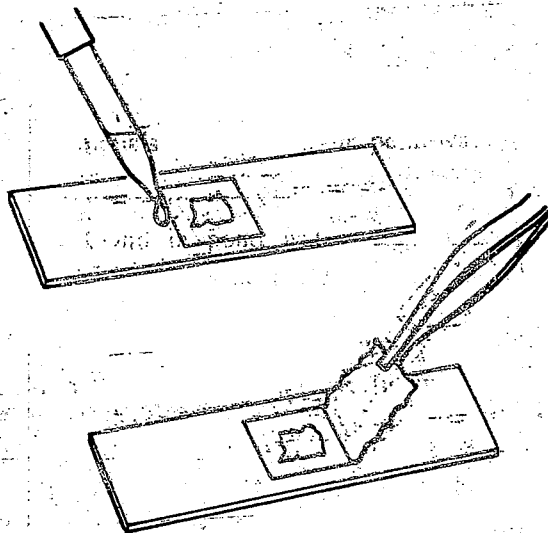
**Objective:** How does a typical plant cell compare with a typical animal cell?

**Materials:** compound microscope, forceps, lugol's solution, methylene blue, glass slides, cover slips, onion, toothpicks, antiseptic bath

## Procedure:

### A. Onion cells:

1. Separate the fleshy part of an onion.
2. With forceps, removes the clear transparent epidermis (thin layer of skin only one cell layer thick).
3. Place a small piece of onion skin on a glass slide. Make sure that the skin is smooth and flat against the slide.
4. Place a drop of water on the onion skin and cover with a cover slip.
5. Examine the slide under low power and high powers. **Describe what you see in your field of view.**
6. Remove your slide from the microscope. Place a drop of lugol's solution at one edge of the coverslip. Draw the stain through by placing a small piece of paper toweling at the other edge of the cover slip (see diagram below).



DRAWING STAIN THROUGH THE SPECIMEN

7. Examine your slide under low power. **Draw and label the parts of a few cells you observe in your field of view.**
8. Examine the slide under high power and **draw another labeled diagram of two onion cells.**
8. **Questions for procedure A:**
  - a. What portions of the onion cells took up the most stain?
  - b. Estimate the length an onion cell under low power and record your answer in  $\mu\text{m}$ . Remember the diameter of the low power field of view is  $1800\mu\text{m}$ .
  - c. Describe the general shape of the onion cell.
9. Throw away your cover slip and wash off your slide. You are now ready to examine your cheek cells.

#### B. Cheek Cells:

1. Place a drop of methylene blue stain in the center of a clean slide.
2. **Gently** scrape the inside of your cheek by touching the flat end of a toothpick to it.
3. Mix the flat end of the toothpick around in the methylene blue to dislodge your cheek cells.
4. Cover with a cover slip.
5. Examine your slide under low power. **Draw and label the parts of a few cells you observe in your field of view.**
6. Examine the slide under high power and **draw another labeled diagram of two cheek cells.**
7. **Questions for procedure B:**
  - a. What portions of the cheek cells took up the most stain?
  - b. Estimate the length a cheek cell under low power and record your answer in  $\mu\text{m}$ . Remember the diameter of the low power field of view is  $1800\mu\text{m}$ .
  - c. Describe the general shape of the cheek cell.
8. Place your cheek cell slide with cover slip into antiseptic bath and put away your microscope.

#### Analysis and Conclusions:

1. From your observations, how are the plant and animal cell similar?
2. From your observations, how the plant and animal cell different?
3. Describe other differences that exist between animal and plant cells which would require greater magnification in order to be observed.
4. Describe the benefits of applying stain to cell specimens.
5. Compare plant and animal cell size.
6. If a protozoan swam at  $300\mu\text{m}$  per second, how much time would it require to cross the field of your microscope under low power?