The Onion Cell Lab

Background: Onion tissue provides excellent cells to study under the microscope. The main cell structures are easy to see when viewed with the microscope at medium power. For example, you will observe a large circular nucleus in each cell, which contains the genetic material for the cell. In each nucleus, are round bodies called nucleoli. The nucleolus is an organelle, which synthesizes small bodies called ribosomes. Ribosomes are so small you cannot see them with the light microscope. Also present in the onion cell, is a well-developed cell wall and a cell membrane just beneath it.

Purpose: To study the structure of the onion epidermal cell, with particular emphasis on the nucleus and nucleoli.

Materials: The following materials are required: onion, microscope, glass slide, cover slip, and iodine (Note: iodine is toxic and will stain - handle with care).

Procedure:

1. Get a glass slide and cover slip for yourself and make sure they are both thoroughly washed and dried.
2. Remove the single layer of epidermal cells from the inner (concave) side of the scale leaf (The thinner the better).
3. Place the single layer of onion cell epithelium on a glass slide. Make sure that you do not fold it over or wrinkle it.
4. Place a drop of iodine stain on your onion tissue.
5. Put the cover slip on the stained tissue and gently tap out any air bubbles.
6. Observe the cells under 4x, 10x, and 40x with the diaphragm wide open. Slowly reduce the light intensity by closing the diaphragm, and observe the image. Which light intensity revealed the greatest cellular detail?

1. In the space provide below, draw a group of 10 neighboring cells at 10x. In one cell, label all the parts you see.
8. Switch to high power at 40x. Can you see a whole cell? If you can, **draw one cell and label it below.** If no, go back to 10x and draw one cell and label it below.

**Questions:**

1. What is the function of the nucleus?

2. Where is the nucleolus found and what does it produce?

3. Describe what ribosomes do in the cell?