**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**I CAN** correctly use a compound microscope to draw accurately detailed observations of specimens.

Draw an accurately detailed labeled scientific drawing of a

specimen viewed through the compound microscope.

**Period \_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**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. The nucleus is the control center of the cell. It contains the genetic material for the cell known as DNA. The **DNA** is the hereditary material that controls all of the activities of a cell, contains the information to make new cells, and provides instructions for making proteins. Also present in the onion cell, is a well-developed **cell wall** which is made of cellulose**.** The cell wall provides strength and support to the cell membrane. The **cell membrane** is just beneath the cell wall. The cell membrane keeps the cytoplasm inside, to allow nutrients in and waste products out, and to interact with things outside the cell.

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

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

**Questions: Answer before you begin.**

1. What is the function of the nucleus? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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2. DNA is the heredity material that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

contains the information to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

and provides instructions for making \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. What is the function of the cell wall? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. The cell membrane keeps the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ inside, allows \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

in and waste products out, and to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with things outside the cell.

**Hypothesis**: If onion skin is viewed at 100X or 400X, the nucleus, cytoplasm and cell wall can be identified.

**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.

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?** \_\_\_\_\_\_\_\_\_\_\_\_

7. In the space provide below, **draw a group of 10 neighboring cells** on 10x (100x magnification). In one cell, ***label*** all the parts you see—**cell wall, cytoplasm, and nucleus.**

8. Switch to high power on 40x (400x magnification). Can you see a whole cell? If you can, **draw one cell and *label* the cell wall, cytoplasm, and nucleus.**  If no, go back to 10x and draw one cell and label it below.