Grade 8 - Onion Cell Lab

Name:

**Problem:**

1. How will submerging cells in a hypertonic solution affect their structure?

**Hypothesis:**

**Materials:**

* Onion
* Scalpel
* Microscope
* Glass slide
* Cover slip
* Iodine
* Water
* Salt Water

**Variables:**

Manipulating Variable: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Responding Variable: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Controlled Variables: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Procedure:**

**Part 1:**

1. Prepare a glass slides and a cover slip ( make sure they are washed and dryed)
2. Retrieve **ISOTONIC** single onion epitheleal cell layer with scalpel/tweezers (thinner is better)
3. Place cell layer on petri dish and add **one** drop of iodine
4. Take layer and add to glass slide, with a cover slip over top ( make sure there are no air bubbles, gently tap out air bubbles if there are any)
5. 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.
6. In the space provide below, **draw a group of 5 neighboring cells** at 40x. In one cell, label all the parts you see.

Onion Cell Diagram - Isotonic Solution

**Part 2:**

1. Prepare a glass slides and a cover slip ( make sure they are washed and dryed)
2. Retrieve **HYPERTONIC** single onion epitheleal cell layer with scalpel/tweezers (thinner is better)
3. Place cell layer on petri dish and add **one** drop of iodine
4. Take layer and add to glass slide, with a cover slip over top ( make sure there are no air bubbles, gently tap out air bubbles if there are any)
5. 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.
6. In the space provide below, **draw a group of 5 neighboring cells** at 40x. In one cell, label all the parts you see.

Onion Cell Diagram - Hypertonic Solution

**Analysis:**

1. How did the saltwater solution and the pure water affect the appearance of onion cells?

2. Explain using proper scientific vocabulary what happened to each cell in the hypertonic solution

3. How could I reverse the effect of putting cells in a hypertonic solution?

4. Explain using proper scientific vocabulary what would happen to each cell if they were put in a hypotonic solution

**Validity:**

**Reliability:**

**Conclusion:**

**References:**