Name -

Observing Cells Practical

State the aim of this experiment:

To use a microscope to view onion (plant cells) under the microscope to get a better understanding of their structure.

Apparatus:

- Small piece of onion
- Scalpel
- White tile
- Forceps
- Microscope coverslip
- Microscope
- Iodine solution
- Pipette

Method:

1. Peel a thin layer of tissue from the inner surface of the onion.
2. Use forceps to carefully lay this thin layer of tissue on the microscope slide.
3. Use the pipette to add a drop of iodine solution on top of the onion sample.
4. Carefully lay a coverslip on the slide, placing one edge down first and lowering the other side slowly.
5. Ensure any excess liquid is soaked up carefully using filter paper or paper towel.
6. Place the slide on the stage of the microscope and secure with the stage clips.
7. Ensure the objective lens is set to the lowest magnification.
8. Look through the eyepiece and use the coarse focus wheel to bring the stage almost up to the objective lens, but do not let them touch.
9. Turn the coarse focus wheel in the other direction, increasing the distance between the stage and the objective lens, until the cells are more in focus.
10. Rotate the objective lens to the next power of magnification.
11. Turn the fine focus wheel to bring the cells into focus and look at the cells.
12. Rotate the objective lens to the highest power of magnification and use the fine focus wheel to ensure they are in focus.
13. In the results space below draw a clear labelled drawing of the cells that are visible. You should include labels for any organelles that are visible.
14. Use an eyepiece graticule to measure the length of one of the cells under your microscope, including units.
15. Measure the length of the same cell in your drawing, including units.
16. Use the equation to calculate the magnification of the drawing and write this underneath your drawing.

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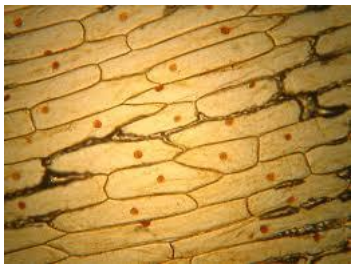
Results:

Pupils should be able to see several onion cells quite clearly and be able to identify at least cell wall and nucleus, possibly vacuole. Drawing must be in pencil and labels should be written horizontally with straight lines.

e.g. 

Magnification = **approx. 400**

Questions:

1. Why is it important to use a thin layer of onion cells?

   So that the cells are only one layer thick and we are not looking at them all on top of each other.

2. Why is iodine solution added to the sample?

   It acts as a stain to make the cells more visible under the microscope.

3. Why is the cover slip applied slowly and starting at one side?

   To prevent air bubbles from forming and to prevent fingerprints on the cover slip, both of which will affect the image.