IB

BIOLOGY LABAROTORY WORK

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Observing plant and animal cells using the light microscope

Materials:

A red onion, potato, distilled water, iodine solution, methylene blue, dropping pipette, fine forcps, scalpel, microscope, slides, cover slips, tooth picks.

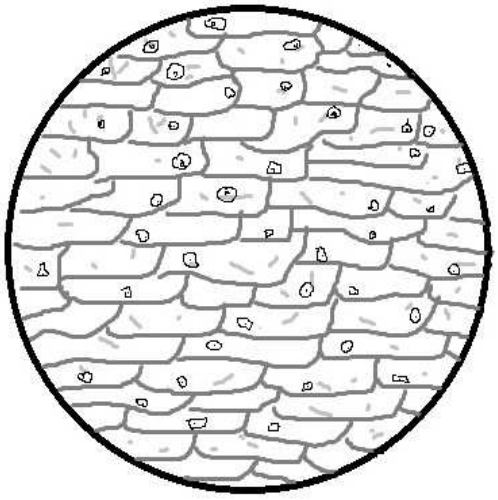
Method:

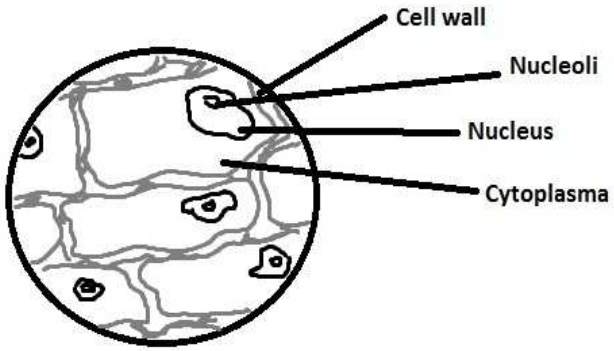
A-Red onion epidermal cell:

1.Cut the onion in four, using a scalpel, from the top t o the base. Take one of the fleshy scales using the scalpel cut a square (5mm by 5mm) on the outer, convex surface, which is dark red.

2. Using fine forceps peel of the surface of one of the colored epidermal squares. Place the fragment, with the torn surf ace facing down, onto a slide. Add a drop of distilled water and a cover slip.

3. Under high power, carefully adjusting the diaphragm, draw a colored cell from each preparation. Add a title and label.





In the microscope we can see that the onion cells ha ve a rounded oblong shape. They zone tightly to each other. Each cell has a dense transparent cover (cell wall, which supports the form of the cell) with the more subtle areas - pores, which can be discerned only under high magnification, using them cell gets the nutrients and take out unwanted substances. The composition of membranes of plant cells is of special substances - cellulose, which gives them durability. Inside is a colorless viscous substance - cytoplasm.

In the cytoplasm there is a small, dense nucleus (containing the genetic information), where we can see the nucleoli.

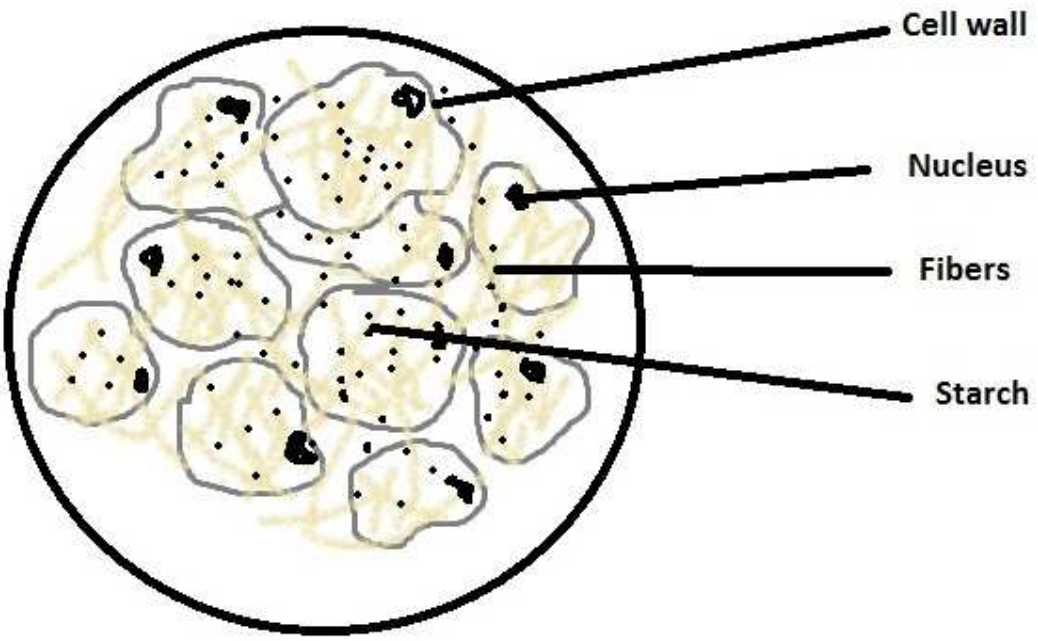
Some cells do not have any nucleus, it means that they are already dead.

B-Cell of banana pulp:

1.Using a scalpel cut a slice of banana. Observe the skin with its prominent ridges and the central part which surrounds the pulp.

2. Take a very small sample of pulp (the size of a pin head) and place on the slide in a drop of iodine solution. Then place a cover slip over it and crush it lightly.

3. Observe the preparation under the microscope. Adjust the diaphragm carefully so that the outline of the cells can be clearly seen. Draw a cell at high power and label it.



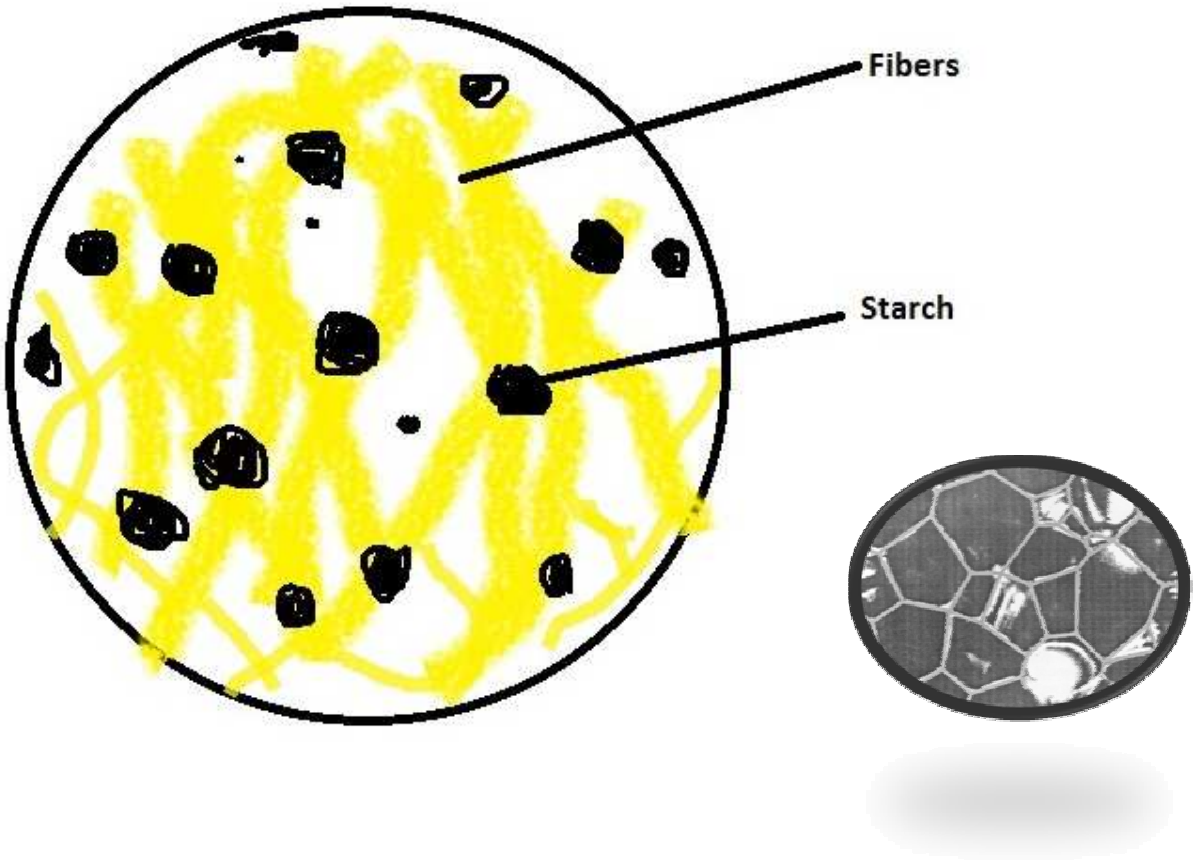
Banana cells are round. We can see that Banana cells have cell wall, which support the form of the cell, and nucleus in the cytoplasm with genetic information. Also there are fibers there, which absorb water and help to digestion in our organism. They are like threads plexiform with each other. On the fibers we can see starch. It is a form of monosaccharide's in the cell. It is like granular powder.

C-Cells of potato tuber:

1.Scrape the surface of a slice of potato tuber using a scalpel. A white liquid appears.

2. Mount the scrapings in a drop of io dine water on a slide. Allow the fragment of potato to soak in the iodine solution. Then place a cover slip over it.

3. Observe the preparation under the microscope. Adjust the diaphragm carefully so that the outline of the cells can be clearly seen. Draw a cell at high power and label it. Compare this slide with the banana slide.

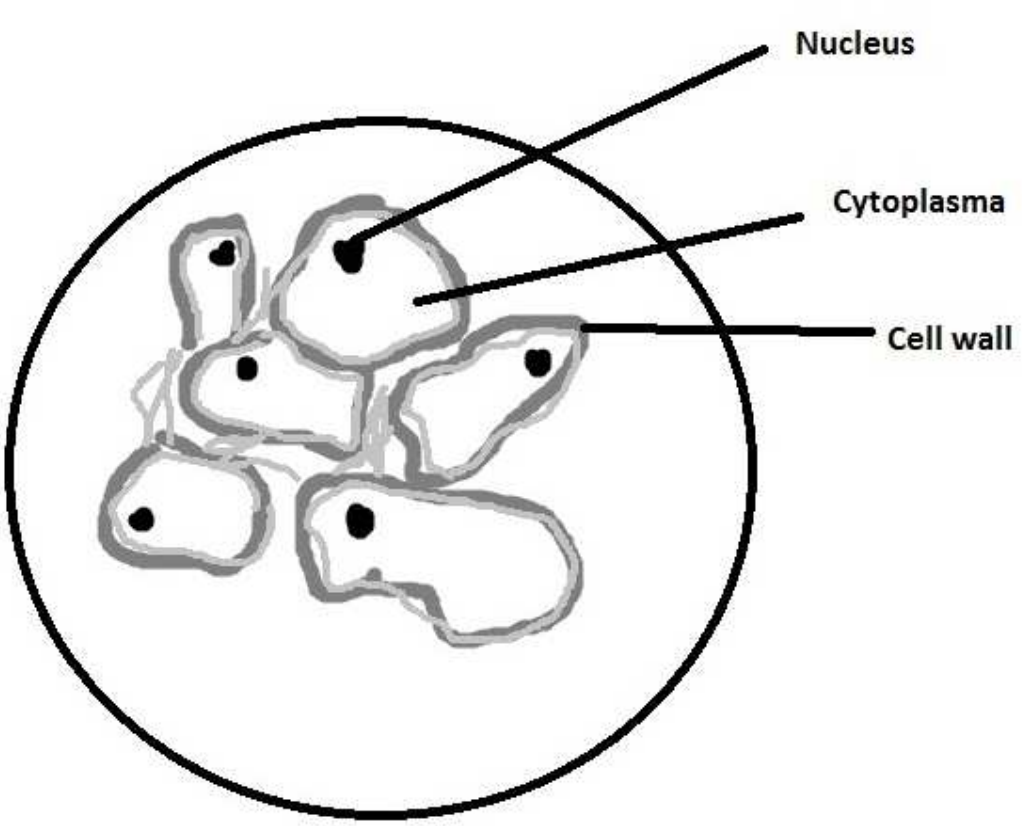


The potato tuber consists mainly of a mass of cells filled with starch and encircled by a thin corky rind. A woody fibers traverse the tubers. The cells of potato have cell wall , which supports the form of the cell, a nd nucleus with genetic information. There we can see much more fibers and starch. The form of the cells of potato is acute-angled. Starch in the tubers is rendered available for the nutrition of the young shoots.

Banana cells are round and potato cells are acute-angled. In the potato cells there more starch than in the banana cells, the fibers are more dense, and the cells more zone tightly to each other. And the banana and potato cell both have nucleus, cell wall.

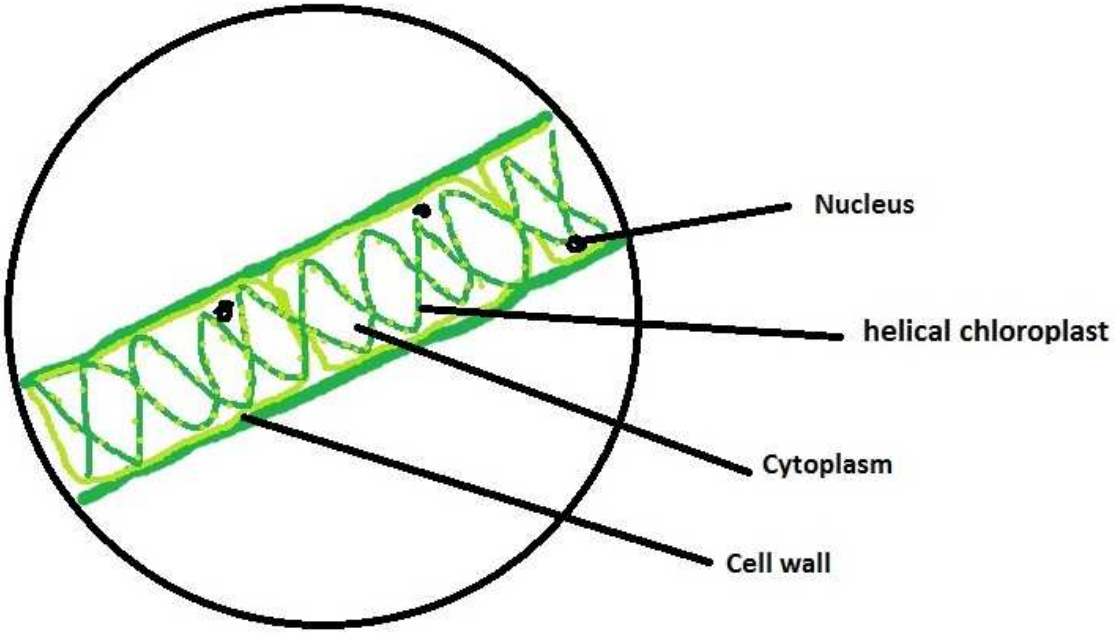
D-Cells of the buccal epithelium:

1. Scrape the internal cheek with a tooth pick that is flattened against the cheek.
2. After passing the tooth pick three to four times on the cheek, mount the scraping on a slide. Add a drop of methylene blue and place a cover slip over it.
3. Observe the preparation under the microscope. Adjust the diaphragm carefully so that the outline of the cells can be clearly seen. Draw a cell at high power and label it.



Epithelium cells are round. They have cell wall, Nucleus, Cytoplasm. The surface of the cells is smooth and cells zone tightly to each other. Also, the cells have pili.

E- Spirogyra



Spirogyra - filamentous algae family Zygnemataceae.

The body of Spirogyra - straight-line string consists of one row of cylindrical cells. Seen under the microscope, each filament consists of an extensive chain of identical cells. Each cell contains a helical chloroplast, a nucleus, cytoplasm and a vacuole enclosed in a cellulose cell wall.

F- Observing Elodea leaves (also called anacharis or water weeds)

1. Place a drop of water on a clean slide.

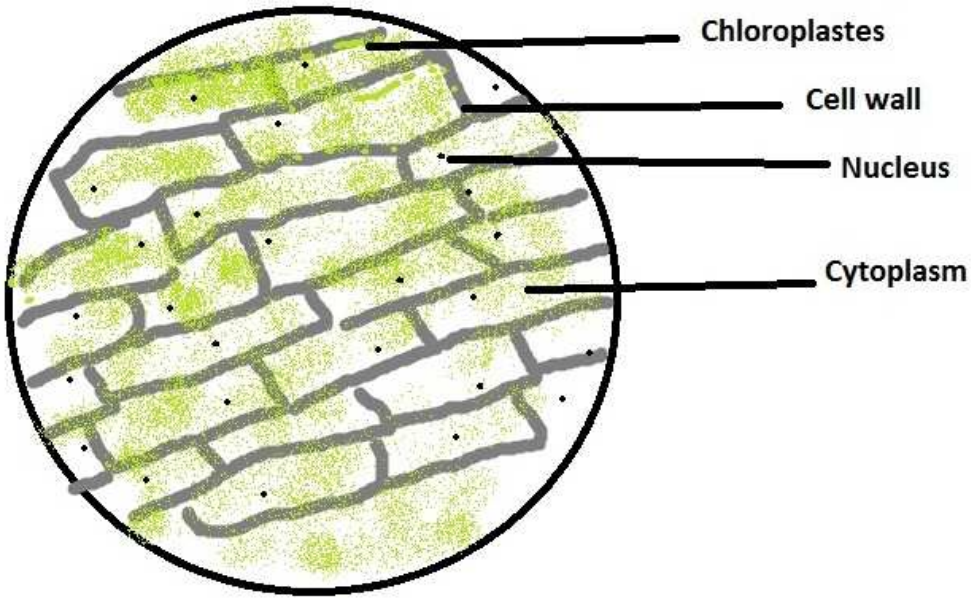
2. Place an Elodea leaf in the drop of water, place a cover slip on top by dropping it at a 45 degree angle.

3. Observe under lowest power first . Draw what you see on your answer document.

4. Observe under low power . Draw what you see on your answer document.

5. Draw what you see on your answer document.

6. Write 5 qualitative and quantitative observations about the cells you observed.



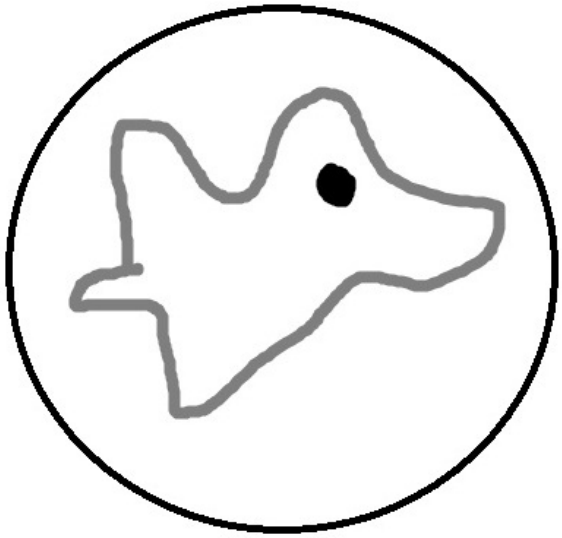
Elodea is a genus of aquatic plants often called the waterweeds.

Cells have cell wall, nucleus, cytoplasm and many chloroplasts inside of the cell near the cell wall. cells have a oblong shape. They zone tightly to each other.

G- Daphnia

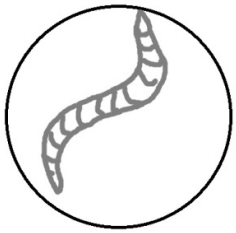
Daphnia is a genus of small, aquatic, mostly freshwater crustaceans characterized by a singl e compound eye, two doubly branched antennae, and a generally translucent carapace. Daphnia are commonly called water fleas because of their jerky or jumping swimming style (although fleas are insects and thus these two groups are only very distantly relat ed as being arthropods).

H- Amoeba



Amoeba is an unicellular organism. In the microscope we can see that It consist of the endoplasm, ectoplasm, cellwall, nucleus. Also it has pseudopodia.

I- Oligochaeta



Oligochaetes - a subclass of annelid worms of the class of Clitellata. Body length from a fraction of mm to 2,5 m. Segmentation of the body is well expressed in the inside and outside. Head, parapodii absent. Each segment of the body contains several pairs of setae. Consists of segments