**B2 CELLS**

**2.1 Cell Structure**

1. **State that living organisms are made of cells.**

All living things are made of cells - microscopic units that act as building blocks. Some organisms are unicellular (one-celled), some are multicellular - made up of many cells.

1. **Identify and describe the structure of a plant cell (palisade cell) and an animal cell (liver cell) as seen under a light microscope.**

**4. Relate the structures seen under the light microscope in the plant cell and animal cell to their functions.**

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 **Plant cell (palisade cell) Animal Cell (liver cell)**

PARTS OF A CELL

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| --- | --- | --- | --- |
|  | **PART** | **DESCRIPTION** | **FUNCTION** |
| **Animal & plant cells** | Cytoplasm | Jelly-like, 70% is water | Contains cell organellesChemical reactions take place here |
| Membrane | Surrounds the cell; partially permeable  | Controls what substances enter & leave the cell. |
| Nucleus | Contains DNA in the form of chromosomes | Controls cell division;Controls cell development;Controls cell activities. |
| **Plant cells only** | Cell wall | Tough layer made of cellulose, surrounds the cell membrane | Freely permeable (allows water and salts to pass through);Protects and supports the cell;Prevents plant cells from bursting |
| Sap vacuole | Fluid-filled space surrounded by a membrane | Contains salts and sugars (cell sap);Helps keep plant cells turgid (firm) |
| Chloroplast | Organelle containing chlorophyll | Chlorophyll taps light energy for photosynthesis |

1. **Describe the differences in structure between typical animal and plant cells.**

|  |  |
| --- | --- |
| **PLANT CELLS** | **ANIMAL CELLS** |
| Have a cellulose cell wall outside the membrane | No cell wall |
| Often have chloroplasts containing chlorophyll | No chloroplasts |
| Often have one large vacuoles containing cell sap | Have only small vacuoles (vesicles) |
| Often have starch grains | Never have starch grains; sometimes have glycogen granules |
| Often regular in shape | Often irregular in shape |

1. **Relate the structure of the following to their functions: red blood cells (transport), root hair cells (absorption).**

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| --- | --- | --- |
| **Structure** | **Special features** | **Functions** |
| **P:\imagesCAJF4Z5T.jpg** | The ‘hair’ gives a large surface area due to its elongated shape | Absorbs water and mineral ions;Anchor the plant firmly in the soil |
| **P:\imagesCAGJA1S3.jpg** | Have no nucleus;contain hemoglobin;biconcave shape (for greater surface area);flexible (so they fit through small capillaries). | Transport oxygen around the body. No nucleus so more room for oxygen bound to hemoglobin.  |

1. **Calculate magnification and size of biological specimens using millimeters as units.**

Magnification (X) = Measured length (mm) ÷ Actual length (mm)