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| Organelle | Function | Other information |
| Plasma membrane | * Forms the boundary between the cell and the extracellular environment * Regulates the movement of substances in and out of the cell | * Size: 3-10 nm thick * Surrounds the outside of the cell |
| Nucleus | * Contains most of the cell’s genetic material, which regulates all the activities of the cell | * Size: 5 µm diameter * Variable location; not necessarily near the center of the cell |
| Nucleolus | * Synthesis of ribosomal DNA * Assembly of ribosomal subunits | * Size: 1-2 µm diameter * Located within the nucleus * Depending on the organism, there may be more than one |
| Mitochondria | * The site of cellular respiration (the production of ATP) | * Size: Variable but 0.5-1.5 µm wide and 3.0-10 µm long * Located in the cytoplasm |
| Ribosomes | * Synthesis of polypeptides (proteins) | * Size: 20 nm * Found free in the cytoplasm or bound to rough endoplasmic reticulum |
| Vacuoles | * Food vacuoles in animal cells are formed by phagocytosis of food particles * Contractile vacuoles of freshwater protists pump excess water from the cell * Central vacuole of plants provides cell volume and stores inorganic ions and metabolic wastes | * Size: Varies according to cell type and size * Located in the cytoplasm, often numerous |
| Rough endoplasmic reticulum | * Synthesis, folding, and modification of proteins * Transport of proteins through the cell * Membrane production | * Size: Variable according to cell size * Found continuous with the nuclear membrane and extending to the cytoplasm as part of the endomembrane system |
| Smooth endoplasmic reticulum | * Synthesis of lipids including oils, phospholipids, and steroids * Carbohydrate metabolism * Transport of these materials through the cell * Detoxification of drugs and poisons | * Size: Variable according to cell size * Found in the cytoplasm as part of the endomembrane system |
| Golgi apparatus | * Modifications of proteins and lipids received from the ER * Sorting, packaging, and storage of proteins and lipids * Transport of these materials in vesicles through the cell * Manufacture of certain macromolecules; e.g. hyaluronic acid | * Size: 1-3 µm diameter * Found in the cytoplasm, associated with the ER |
| Vacuoles and vesicles | * Food vacuoles in animal cells are formed by phagocytosis of food particles * Contractile vacuoles of freshwater protists pump excess water from the cell * Central vacuole of plants provides cell volume and stores inorganic ions and metabolic wastes | * Size: Variable according to cell size * Found in the cytoplasm, often numerous |
| Lysosomes | * Intracellular digestion of macromolecules (fats, proteins, polysaccharides, and nucleic acid * Recycling of cellular components (autophagy) * Low internal pH maintained by H+ pump in the lysosomal membrane | * Size: Varies according to cell size * Found free in the cytoplasm |
| Chloroplasts | * The site of photosynthesis (glucose production) | * Size: 2x5 µm * Found within the cytoplasm of plant leaf (and sometimes stem) cells |
| Cell wall | * Protects the cell * Maintains cell shape * Prevents excessive water uptake | * Size: 0.1 µm to several µm thick * Surrounds the plant cell and lies outside the plasma membrane |
| Plastids | Different plastids have particular roles:   * Chloroplasts: site of photosynthesis * Chromoplasts: Contain red, orange, and/or yellow pigments and give colour to plant organs such as flowers and fruits. They serve as attractants and identifiers * Amyloplasts: Storage of starch and fats * Tannosomes: For synthesizing and producing tannins (bitter taste) and polyphenols (antioxidants) | * Size: Variable depending on type * Located in the cytoplasm |