

Animal Cell **Organelles** and Their Functions

Nucleus



- Controls the cell's activities.
- Contains DNA (genetic information).
- The nucleolus makes ribosomes.

Function: Stores genetic information and regulates the cell.

Nucleolus



- A dense region inside the nucleus.
- Makes ribosomes (rRNA).

Function: Produces ribosomes.

Ribosomes



- Small particles found in the cytoplasm or attached to the ER.
- Made of rRNA and proteins.

Function: Build proteins (protein synthesis).

Rough Endoplasmic Reticulum (RER)



- Membrane network with ribosomes on its surface.
- Synthesizes and helps modify proteins.

Function: Makes and processes proteins.

Smooth Endoplasmic Reticulum (SER)



- Membrane network without ribosomes.
- Synthesizes lipids, helps detoxify substances and stores calcium.

Function: Produces lipids, detoxifies substances and stores Ca^{2+} .

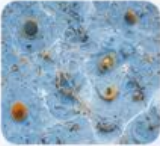
Mitochondria



- Where cellular respiration occurs.
- Breaks down food molecules (glucose) to make ATP (energy).

Function: Produces energy (ATP) for the cell.

Cytoplasm



- Gel-like substance inside the cell.
- Holds organelles.
- Place where many cellular reactions occur.

Function: Supports organelles and is the site of many metabolic processes.

Cell membrane (plasma membrane)



- Thin, flexible boundary that surrounds the cell.
- Controls what enters and leaves the cell.
- Made of a lipid bilayer with proteins.

Function: Protects the cell and regulates the movement of substances.

Vacuoles (small in animal cells)



- Small membrane-bound sacs.
- Store water, food, waste or other substances temporarily.

Function: Storage and transport of materials.

Centrioles



- Cylindrical structures made of microtubules.
- Help organize the mitotic spindle during cell division.

Function: Organize microtubules and help in cell division.

Golgi apparatus



- Stacked, flattened membranes (cisternae).
- Modifies, sorts and packages proteins and lipids from the ER.
- Forms vesicles for transport or secretion.

Function: Modifies, sorts and packages proteins and lipids.

Lysosomes



- Membrane-bound vesicles containing digestive enzymes.
- Break down waste materials, food particles and worn-out organelles.

Function: Digest and recycle cellular materials.

Peroxisomes



- Small membrane-bound vesicles.
- Break down fatty acids and harmful substances (e.g., hydrogen peroxide).

Function: Detoxify harmful substances.