

CLOSE ENCOUNTERS WITH THE ANIMAL CELL

width of 7 nm.

CELL MEMBRANE

Partially permeable membrane that controls movement in and out of the cell. Defines cell, encloses its contents, and is used in cell recognition. They can fold to microvilli for a wider surface area for absorption.

LYSOSOME

Spherical sacs with no internal structure surrounded by single membrane. Breakdown unwanted structures. Contain digestive enzymes that can damage the cell if not kept separated.

diameter of 0.1-0.5 μm

RIBOSOMES (80S)

Made up of RNA and protein. Occur in vast numbers and roam freely in cytoplasm and on the endoplasmic reticulum. It is the site of protein synthesis where individual cells can build their specific proteins.

diameter of 22 nm

diameter of 22 nm

CENTRIOLES

9 sets of 3 microtubules made of tubulin. spindle fibers during molecular division. Microtubules form cytoskeleton and scaffolding for cell movements/positioning in the cell.

diameter of .2 μm /length of .5 μm

VACUOLE

Surrounded by a membrane called tonoplast. It stores water, ions, sugars, and unwanted waste.

size varies depending on cell size

MITOCHONDRIA

Rod-shaped cell with a double membrane that controls entry and exit, cristae (infoldings of inner membrane), and enzymes for aerobic respiration. The matrix is the rest of the mitochondria, which is semi rigid with many enzymes in the klebs cycle (stage of aerobic respiration).

diameter of 0.5-1.0 μm /length of 1-7 μm

GOLGI BODY

Stack of flattened sacs that collect, process, and sort molecules ready for transport in Golgi vesicles to other parts in or out of the cell (particularly proteins from the rough endoplasmic reticulum). They can be constantly formed at one end from vesicles and broken down at the other end to form vesicles. A stack of sacs with their associated vesicles is a Golgi Apparatus/Golgi Complex.

size varies depending on cell size

ENDOPLASMIC RETICULUM

Extensive system of membranes that contain flattened compartments (sacs) where processes can occur. Continuous with the outer membrane of the nuclear envelope.

ROUGH ER

Covered with ribosomes that enter and move through sacs where they can be modified. These sacs (vesicles) break off to join the Golgi body and ER together, which forms secretory pathway to export proteins in and out of the cell via Golgi vesicles.

SMOOTH ER

Unlike the Rough ER, the Smooth ER lacks ribosomes. It's responsible for making lipids and steroids, such as cholesterol, estrogen, and testosterone.

size varies depending on cell size

diameter of 10-20 μm

Made up of a nuclear envelope (double membrane that handles exit and entry of materials) and nuclear pores that are large enough to let molecules besides DNA leave. Has chromatin (with DNA and associated proteins) which condense into chromosomes during cell division. Its nucleolus makes RNA and assembles ribosomes.

THE NUCLEUS

UP CLOSE AND PERSONAL WITH THE

PLANT CELL

CELL WALL

Consists of cellulose fibers and other polysaccharides. It provides mechanical strength to prevent cell lysis and strengthen the entire plant. Plasmodesmata connects to cytoplasm of adjacent cells and allows substances to pass through on the symplast pathway. Middle lamella acts as a boundary between adjacent cell walls and cements them together.

size varies depending on cell size

CELL MEMBRANE

Partially permeable membrane that controls movement in and out of the cell. Defines cell, encloses its contents, and is used in cell recognition. They can fold to microvilli for a wider surface area for absorption.

width of 7 nm.

MITOCHONDRIA

Rod-shaped cell with a double membrane that controls entry and exit, cristae (infoldings of inner membrane), and enzymes for aerobic respiration. The matrix is the rest of the mitochondria, which is semi-rigid with many enzymes in the Krebs cycle (stage of aerobic respiration).

diameter of 0.5-1.0 μm /length of 1-7 μm

RIBOSOMES (70S)

Made up of RNA and protein. Found in the mitochondria and chloroplasts. It is the site of protein synthesis where individual cells can build their specific proteins.

diameter of 17 nm

size varies depending on cell size

ENDOPLASMIC RETICULUM

Extensive system of membranes that contain flattened compartments (sacs) where processes can occur. Continuous with the outer membrane of the nuclear envelope.

size varies depending on cell size

ROUGH ER

Covered with ribosomes that enter and move through sacs where they can be modified. These sacs (vesicles) break off to join the Golgi body and ER together, which forms secretory pathway to export proteins in and out of the cell via Golgi vesicles.

SMOOTH ER

Unlike the Rough ER, the Smooth ER lacks ribosomes. It's responsible for making lipids and steroids, such as cholesterol, estrogen, and testosterone.

GOLGI BODY

Stack of flattened sacs that collect, process, and sort molecules ready for transport in Golgi vesicles to other parts in or out of the cell (particularly proteins from the rough endoplasmic reticulum). They also convert sugars into cell wall components for plant cells. They can be constantly formed at one end from vesicles and broken down at the other end to form vesicles.

CHLOROPLASTS

diameter of 3-10 μm /width of 1 μm

Made of a chloroplast envelope/double membrane that controls entry and exit. Has enzymes necessary for photosynthesis.

diameter of 10-20 μm

Made up of a nuclear envelope (double membrane that handles exit and entry materials) and nuclear pores that are large enough to let molecules besides DNA leave. Has chromatin (with DNA and associated proteins) which condense in chromosomes during cell division. Its nucleolus makes RNA and assembles ribosomes.

VACUOLE

Surrounded by a membrane called tonoplast. It stores water, ions, sugars, and unwanted waste and pushes chloroplasts to the edges of the cell to give the cell turgidity to support the plant.

size varies depending on cell size

THE NUCLEUS