

Eukaryotic Cell Organelles and Structures

Cell Structure / Component	Composition	Function
Basal Body	9+0 microtubule triplets	Organize structure of cilia and flagella
Cell Wall*	Contains cellulose fibrils	Support and protection
Central vacuole	Water, ions, sugars and some proteins	Water and ion reservoir
Centriole**	9+0 pattern of microtubules	Forms basal bodies that give rise to microtubules
Chloroplast*	Inner membrane (grana) within double membrane, chlorophyll and accessory pigments	
Chromatin	DNA strands and associated proteins	Heredity information, and Control of the cell
Cilia and flagella	9+2 pattern of microtubules	Movement of cell
Cytosol	Fluid medium of water, amino acids and ions, etc	Reservoir for raw materials for cellular synthesis
Cytoskeleton	Microtubules and microfilaments	Cell shape and movement of parts
Endoplasmic Reticulum (ER)	Membranous flattened channels and tubular channels	Synthesis / modification of proteins and other substances and transport by vesicle formation
Endoplasmic Reticulum, Rough	Has ribosomes attached	Site of protein synthesis
Endoplasmic Reticulum, Smooth	Has NO ribosomes attached	
Endocytic vesicle	Membranous sac containing engulfed materials (e.g. bacteria)	Digest contents via fusion with lysosomes
Golgi Apparatus** (dictyosome*)	Stack of membranous sacs	Processing and packaging of macromolecules (e.g. glycoproteins)
Lysosomes*	Membranous vesicles containing digestive enzymes	Intracellular digestion
Microbodies	Membranous vesicles containing specific enzymes	Various metabolic tasks
Microfilaments	Thin fibers (7.5 nm) of actin (protein)	Constriction of microvilli, plasma membrane
Microtubules	Small (~30 nm dia.) cylinders of tubulin (protein)	Cell shape, organelle movement, cilia and flagella movement
Microvillus**	Cell projections containing microfilaments	Increases cell surface area
Middle Lamella*	Pectin layer (polysaccharide) in plant cell walls	Cementing agent between cell walls
Mitochondrion	Folded inner membrane (cristae) within outer membrane	Cellular respiratory energy production (ATP)
Nuclear envelope	Double membrane with pores	Separation of nucleus content from cytoplasm
Nuclear pore	Opening (100 nm) in nuclear envelope, complex structure	Passage of ribosomes form nucleolus to cytoplasm
Nucleolus	Concentrated area of chromatin, RNA and proteins within the nucleus	Ribosome formation
Nucleus	Double membrane envelope surrounding the nucleoplasm, chromosomes and nucleoli	Control of cell reproduction, protein synthesis, control of cell in general
Plasma membrane	Bilayer of phospholipids and embedded proteins	Selective passage of molecules into and out of the cell, cell recognition, communication, location of some enzymes
Polysome (polyribosome)	A group of ribosomes	Involved in production of copies of the same protein
Ribosomes	Protein and rRNA in two subunits	Protein synthesis
Starch grains* (amyloplasts)	Starch storage (polymer of glucose units)	Energy storage
Vacuoles	Large membranous sacs	Storage of various substances
Vesicles	Small/tiny vacuoles	Storage / transport of various substances