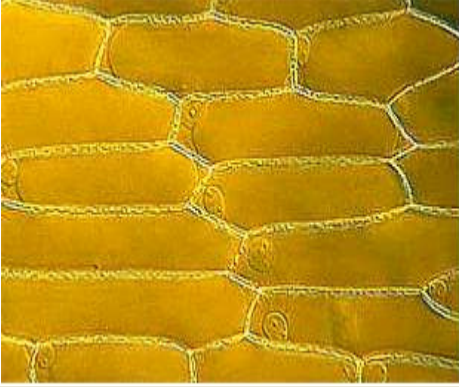
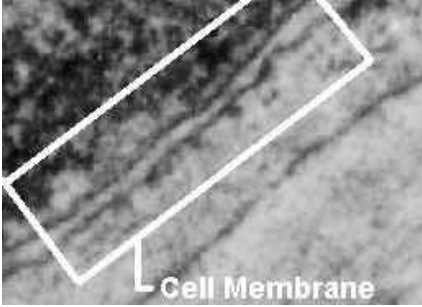
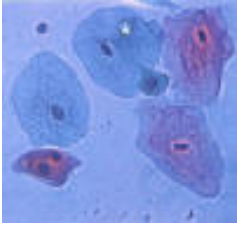
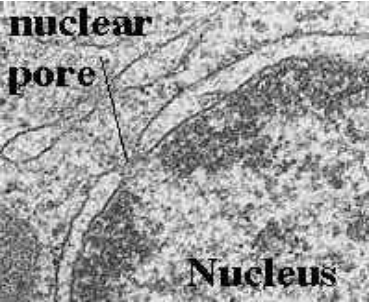


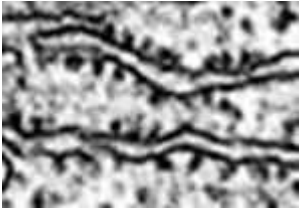

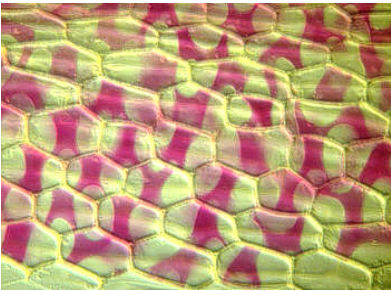


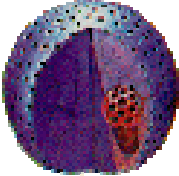


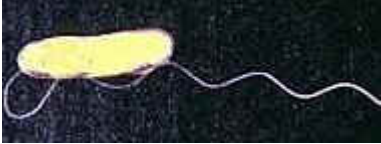

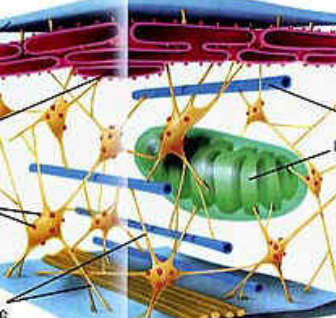


Cell Structures & Functions

| CELL STRUCTURE | LOCATION | DESCRIPTION | FUNCTION |
|--|--|---|---|
| <p style="text-align: center;">Cell Wall</p>  | <p>Plant, Fungi, & Bacteria, but not animal cells</p> | <ul style="list-style-type: none"> • Outer layer • Rigid & strong • Made of cellulose | <ul style="list-style-type: none"> • Support (grow tall) • Protection • allows H₂O, O₂, CO₂ to diffuse in & out of cell |
| <p style="text-align: center;">Plasma/Cell Membrane</p>  | <p style="text-align: center;">All cells</p> | <ul style="list-style-type: none"> • Plant - inside cell wall • Animal - outer layer; cholesterol • Double layer of phospholipids with proteins • Selectively permeable | <ul style="list-style-type: none"> • Support • Protection • Controls movement of materials in/out of cell • Barrier between cell and its environment • Maintains homeostasis |
| <p style="text-align: center;">Nucleus</p>  | <p>All cells except prokaryotes</p> | <ul style="list-style-type: none"> • Large, oval • May contain 1 or more nucleoli • Holds DNA | <ul style="list-style-type: none"> • Controls cell activities • Contains the hereditary material of the cell |
| <p>Nuclear membrane</p>  | <p>All cells except prokaryotes</p> | <ul style="list-style-type: none"> • Surrounds nucleus • Double membrane • Selectively permeable | <ul style="list-style-type: none"> • Controls movement of materials in/out of nucleus |

| | | | |
|--|--|--|---|
| <p>Cytoplasm</p>  | <p>All cells</p> | <ul style="list-style-type: none"> • Clear, thick, jellylike material (cytosol) • Organelles found inside cell membrane • Contains the cytoskeleton fibers | <ul style="list-style-type: none"> • Supports and protects cell organelles |
| <p>Endoplasmic reticulum (ER)</p>  | <p>All cells except prokaryotes</p> | <ul style="list-style-type: none"> • Network of tubes or membranes • Smooth w/o ribosomes • Rough with embedded ribosomes • Connects to nuclear envelope & cell membrane | <ul style="list-style-type: none"> • Carries materials through cell • Aids in making proteins |
| <p>Ribosome</p>  | <p>All cells</p> | <ul style="list-style-type: none"> • Small bodies free or attached to ER • Made of rRNA & protein | <ul style="list-style-type: none"> • Synthesizes proteins |
| <p>Mitochondria</p>  | <p>All cells except prokaryotes</p> | <ul style="list-style-type: none"> • Peanut shaped • Double membrane • Outer membrane smooth • Inner membrane folded into cristae | <ul style="list-style-type: none"> • Breaks down sugar (glucose) molecules to release energy • Site of aerobic cellular respiration |

| | | | |
|---|---|--|--|
| <p>Vacuole</p>  | <p>Plant cells have a single, large vacuole</p> <p>Animal cells have small vacuoles</p> | <ul style="list-style-type: none"> • Fluid-filled sacs • Largest organelle in plant cells | <ul style="list-style-type: none"> • Store food, water, metabolic & toxic wastes • Store large amounts of food or sugars in plants |
| <p>Lysosome</p>  | <p>Animal - common</p> | <ul style="list-style-type: none"> • Small and round with a single membrane | <ul style="list-style-type: none"> • Breaks down larger food molecules into smaller molecules • Digests old cell parts |
| <p><u>Chloroplast</u></p>  | <p>Plants and algae</p> | <ul style="list-style-type: none"> • Green, oval containing chlorophyll (green pigment) • Double membrane with inner membrane modified into sacs called thylakoids • Stacks of thylakoids called grana & interconnected • Gel like innermost substance called stroma | <ul style="list-style-type: none"> • Uses energy from sun to make food (glucose) for the plant • Process called photosynthesis • Release oxygen |
| <p>nucleolus</p>  | <p>All cells except prokaryotes</p> | <ul style="list-style-type: none"> • Found inside the cell's nucleus • May have more than one • Disappear during cell division | <ul style="list-style-type: none"> • Make ribosomes |

| | | | |
|---|--|---|---|
| <p>Golgi Apparatus</p>  | <p>All cells except prokaryotes</p> | <ul style="list-style-type: none"> • Stacks of flattened sacs | <ul style="list-style-type: none"> • Modify proteins made by the cells • Package & export proteins |
| <p>Cilia</p>  | <p>Animal cells, Protozoans</p> | <ul style="list-style-type: none"> • Have a 9-2 arrangement of microtubules • Short, but numerous | <ul style="list-style-type: none"> • Movement |
| <p>Flagellum</p>  | <p>Bacterial cells & Protozoans, some Animal</p> | <ul style="list-style-type: none"> • Have a 9-2 arrangement of microtubules • Long, but few in number | <ul style="list-style-type: none"> • Movement |
| <p>Centrioles</p>  | <p>Animal cells</p> | <ul style="list-style-type: none"> • Paired structures near the nucleus • Made of a cylinder of microtubule pairs | <ul style="list-style-type: none"> • Separate chromosome pairs during mitosis |
| <p>Cytoskeleton</p>  | <p>Eukaryotic Cells</p> | <ul style="list-style-type: none"> • Made of microtubules & microfilaments | <ul style="list-style-type: none"> • Strengthen cell & maintains the shape • Moves organelles within the cell |