

Eukaryotic Cells

- _____ and _____ cells are two kinds of eukaryotic cells. These types of cells have many parts in common, but also some features that are different.
- The structures inside cells can be compared to the structures in cities.

Cell Wall: (_____)

Cell Wall – A rigid structure that surrounds the _____ and provides support to the cell.

- _____ and _____ cells have cell walls. _____ cells do not.
- Cell walls are made of a complex sugar called _____.
- Fungi have cell walls made of _____.
- Bacteria and archaea also have cell walls, though they are different from those of plants or fungi.

Cell Membrane: (City border)

Cell Membrane – A protective layer that covers a cell's surface and acts as a _____.

- **The cell membrane separates the cell from its _____.**
- **It also controls materials going into and out of a cell.**
- **_____ (lawns) is contained within the cell membrane.**
- **The cell membrane is the outermost layer in cells that lack a _____. In cells that have a cell wall, the cell membrane lays just inside the _____.**
- **The cell membrane is made of a double-layer of _____ molecules.**
- **One end of a phospholipid molecule is *hydrophobic*, or “water _____”.**
The other end of the molecule is *hydrophilic*, or “water _____”.
- **The hydrophobic ends of the phospholipid molecules come together. The hydrophilic ends form the outer part of the cell membrane.**
- **Proteins and lipids are also part of the cell membrane. These materials allow _____ and water to move into the cell, and _____ to move out.**

Cytoskeleton: (steel girders)

Cytoskeleton – A web of _____ in the cytoplasm.

- **The cytoskeleton keeps the cell membrane from collapsing and allows a cell to retain its _____.**
- **The cytoskeleton also helps some cells to _____.**

Nucleus: (_____)

Nucleus – A membrane-bound organelle in eukaryotic cells that contains the cell's _____ and controls the activities of the cell.

- **DNA (blueprints) contains information on how to make a cell's _____.**
- **The nucleus is covered by a double-membrane. This membrane contains _____ which allow materials to pass in and out of the nucleus.**
- **The nuclei of some cells also contain a *nucleolus* (construction company), which makes _____.**

Ribosomes: (_____)

Ribosomes – Cell organelle that makes

_____.

- **Ribosomes are the smallest of organelles.**
- **There are more ribosomes in a cell than any other organelle.**
- **Some ribosomes float freely within the cytoplasm, but some are attached to the cytoskeleton or membranes.**
- **Ribosomes are not covered by a _____.**
- **Ribosomes piece _____ together to make proteins.**
- **All cells (prokaryotic and eukaryotic) have ribosomes.**

Endoplasmic Reticulum: (Highway system)

Endoplasmic reticulum (ER) – A folded system of membranes that assists in the production, processing, and transportation of proteins, and the production of lipids.

- **Many of the chemical reactions in a cell take place on or in the ER.**
- **Proteins, _____, and other materials are made in the ER.**

- **The ER serves as the transportation system in the cell.**
- **The ER can be _____ (ribosomes attached) or _____ (no ribosomes). Rough ER is usually near the nucleus, while smooth ER is often found near the perimeter.**

Mitochondria: _____)

Mitochondria – An organelle in which sugar is broken down to produce _____.

- **Mitochondria are surrounded by _____ membranes. The outer membrane is shaped like a kidney bean. The inner membrane has many folds to increase its _____.**
- **Mitochondria break down sugar to release energy. This energy is stored in _____ molecules. Mitochondria produce most of a cell's ATP.**
- **Mitochondria are about the same size and shape as _____. They have their own DNA, and can reproduce. Because of these things, some scientists think mitochondria (and chloroplasts)**

were once _____ that were
“eaten” by larger cells.

Chloroplasts: (_____ energy plants)
Chloroplasts – Organelles in plant and algae
cells where _____ takes place.

- Like mitochondria, chloroplasts have two membranes and their own _____ .
- Chloroplasts are only found in _____ and _____ cells.
- Chloroplasts contain the green pigment _____, which is found on stacked-coin-like structures within the chloroplast.
- Chlorophyll traps energy from the sun and uses it in photosynthesis to make _____.

Golgi Complex: (post office)
Golgi complex – An organelle that packages
and distributes _____.

- The Golgi complex was discovered by Italian scientist Camillo Golgi in 1897.
- The Golgi complex is the same shape as smooth _____.

- **Lipids and proteins from the _____ are delivered to the Golgi complex, where they are _____ to do different jobs.**
- **The final products are enclosed in a pinched-off bubble of the Golgi complex's membrane. This "bubble" transports its contents to other parts of the cell, or out of the cell.**

Vesicles: _____ (_____)

Vesicles – A small _____ that surrounds materials in a eukaryotic cell.

- **Vesicles are formed when part of a membrane pinches off to form a bubble.**
- **Vesicles are used to _____ materials within the cell, or out of the cell.**
- **Some vesicles are formed when the cell membrane surrounds an object outside the cell and moves it into the cell.**

Lysosomes: _____ (_____)

Lysosomes – Organelles that contain digestive _____.

- **Lysosomes destroy worn-out or damaged organelles, get rid of waste materials, and protect the cell from _____.**

- **Lysosomes are found mainly in _____ cells.**
- **They are created in the Golgi complex.**
- **Lysosomes can also release their enzymes to destroy the entire cell (apoptosis).**

Vacuoles: (_____)

Vacuoles – Vesicles that store _____ and other liquids in plant cells.

- **Most plant cells have a large central vacuole that stores water and helps support the cell.**
- **Some plants wilt when the large central vacuoles in their cells lose water.**
- **Some vacuoles act like _____ and aid in digestion within the cell.**