

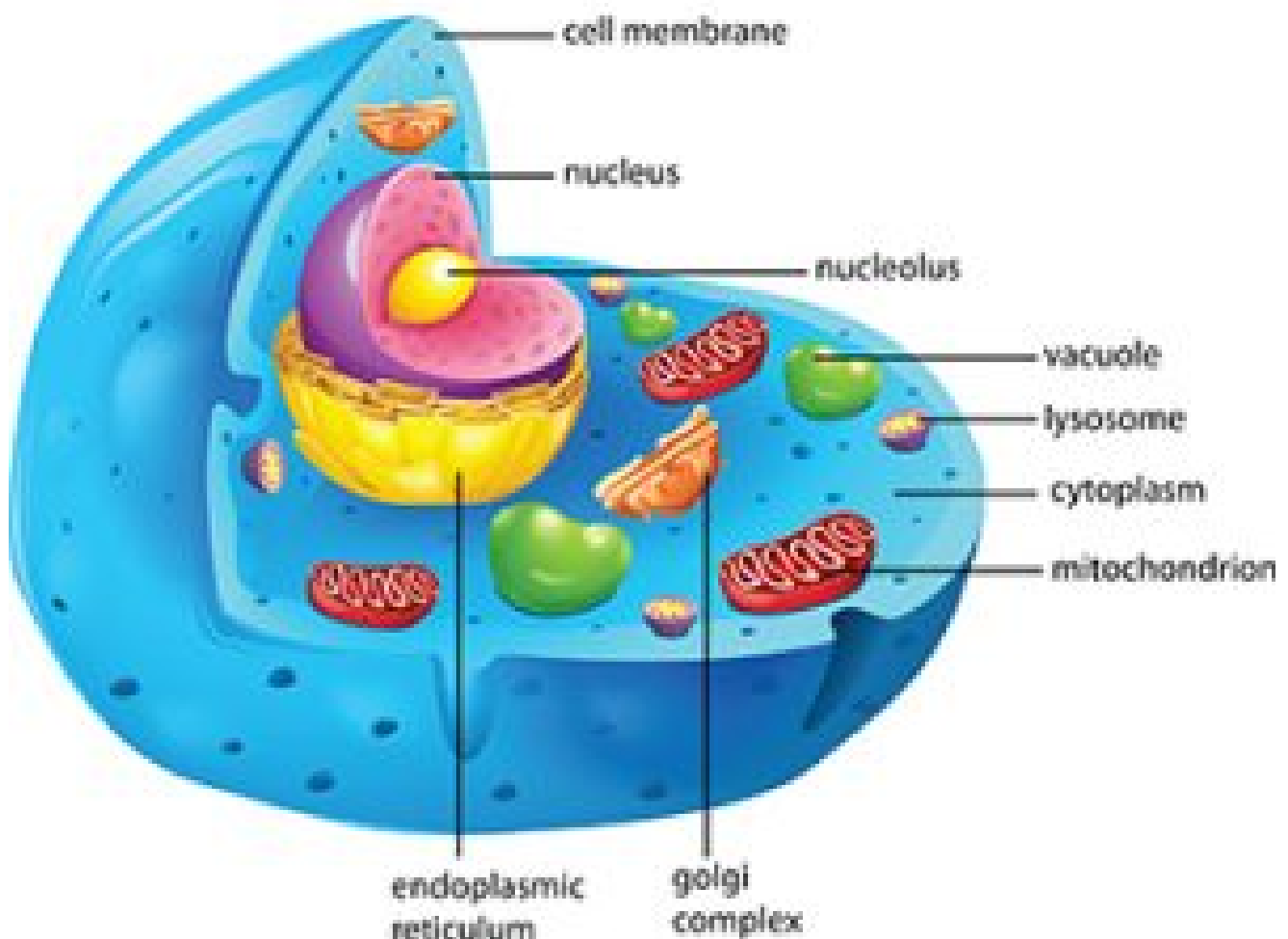
Cell Organelles

The organelles of a cell are the internal parts that are responsible for all of the jobs of keeping the cell healthy and living. Each organelle has a specific duty.

The word “organelle” means “small organ” and these tiny powerhouses do everything from protecting the cell, repairing/healing, assisting in growth, getting rid of waste products....all the way to reproduction.

Each organelle’s job also depends on the other organelles. If any organelle stops doing its function, the entire cell will die.

Anatomy of an Animal Cell



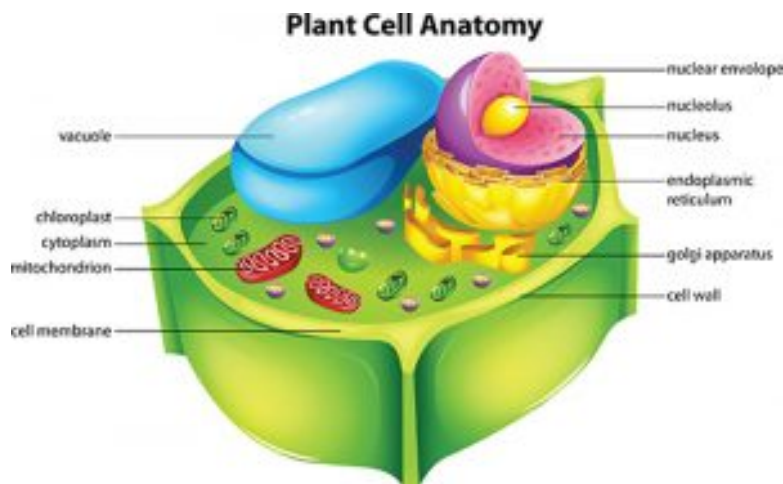
Anatomy of an Animal Cell

The study of “cell theory” helps us to understand each of the organelles in both plant and animal cells and what their jobs are. There are 16 organelles in animal-like cells and 15 organelles in plant-like cells.

Scientists that study the various cells believe that millions of years ago there was on a single cell that didn't contain any organelles. We still have some of these cells around today and they are called “prokaryotes.”

The creation of organelles is thought to have developed when one cell consumed another cell and then they both learned to co-exist together. Over more millions of years the inner cell developed a nucleus inside a membrane; these cell types are called “eukaryotic” cells.

In plant-like cells they made a stiff wall in the cell and this helped them to begin getting energy from sunlight.



Plant and animal cells have many of the same types of organelles that work in many of the same ways. There are 10 organelles that both plant cells and animal cells have.

However, plant-like cells are constructed for the purpose of photosynthesis only and make use of the rigid wall, along with organelles that work to create energy from sunlight. Animal-like cells have a lot more variations and abilities in their organelles.

Plant cells have 5 plant-cell-specific organelles and animals have 6 animal-cell-specific organelles.

Organelles common to both Plant and Animal cells and their jobs:

- Cell membrane: The enclosure around the cell that controls molecules that are allowed to leave and enter the cell.
- Cytoplasm: Is the main method of helping to hold all of the plant cell organelles together.
- Endoplasmic reticulum: This makes and moves all of the chemical compounds both from and to the nucleus.

- Golgi apparatus: It has the power to change fats and proteins inside the cell and gets them ready to move outside of the cell or to store them.
- Lysosomes: This is the cell's "waste management" system. It breaks down the waste into compounds that are simpler for use by other organelles.
- Mitochondria: This changes the oxygen brought into the cell into energy and nutrients.
- Nucleus: This is kind of like the "brain" of the cell because it manages all of the activities of the cell as well as being the home of the DNA.
- Peroxisomes: Important for cell health, this takes toxic materials that enter the cell and digests them.
- Ribosomes: A protein builder for use by the cell.
- Vacuole: Maintaining a balanced PH level inside the cell and stores waste products.

Organelles and their jobs found only in plant cells:

- Cell Wall: The major barrier that protects plant cells.
- Chloroplast: Uses photosynthesis to convert sunlight into the energy that a plant cell need.
- Cytoplasm: Is the main method of helping to hold all of the plant cell organelles together.
- Plasmodesmata: Gives the ability to move material as well as communication to nearby cells.
- Vesicle: Assists in enzyme storage and moves materials around inside the cell.

Organelles found only in animal cells and their jobs:

- Centrioles: this assists a cell when it is dividing in a process called "mitosis" and "meiosis."
- Cytoskeleton: Just as it sounds, this is the skeleton or structure for cell support.
- Microfilaments: This is additional support for the structure of the cytoskeleton.
- Microvilli: This absorbs nutrients needed by the cell and also helps in the movement of the cell.
- Secretory Vesicles: Controls elements that are released by the cell, including waste.

Fun Organelle Facts:

- **Microscopic and Bigger Organelles** – While most cells are too small to see with just your eyes, there are some cells with organelles big enough to see with a light microscope.
- **Semi-permeable membranes** – Organelles in an animal cell are protected by a cell membrane that's made up of fatty substances. The design is specialized so that some chemicals are blocked, while others are allowed to get through without harming the organelles and their functions.
- **Double protection** – Animal-like cells have organelles that also have their own membranes surrounding them.

- **The power of the nucleus** – Both plant and animal cells have an organelle called the nucleus. This organelle contains the DNA that is used for cell reproduction.
- **The number of Mitochondria** – Mitochondria is an organelle that gets its energy from glucose by using oxygen. The quantity of mitochondria in a cell depends on the cell's job. Liver cells contain over 2,000 mitochondria.
- **Ribosome** – Ribosomes are some of the smallest organelles and they don't have a membrane around them. The ribosome is the location in the cell that makes proteins.

Cell Organelles Quiz

Now let's test what you have learned!