Cell

1. **What is Cell?**
2. Ans. Cell is the structural and functional unit of complex structure of life.

3. **How many types of organisms are based on the number of cells?**
   Ans. Living organisms are two types
   a. Unicellular Organisms
   b. Multicellular Organisms

4. **What are Unicellular Organisms?**
   Ans. The organisms which are made up of a single cell are called Unicellular organisms.
   Ex: Amoeba, Paramecium

5. **What are Multicellular Organisms?**
   Ans. The organisms which are made up of more than one cell are called Multicellular Organisms.
   Ex: Human Body

6. **What is the smallest Cell?**
   Ans. The smallest cell is Bacterial Cell (0.1 × 0.5 microns).

7. **What is the largest cell?**
   Ans. The largest cell is the Egg of Ostrich (170 mm × 130 mm).

8. **What is the largest Cell of the Human Beings?**
   Ans. The largest Cell of Human Beings are Nerve Cell.

9. **What is Protoplasm?**
   Ans. All living cells contain a jelly like substance surrounded by cell membrane is called Protoplasm.
   It is made up of Carbon, Nitrogen, Hydrogen, Oxygen along with small quantity of Calcium, Phosphorus and Sulphur.

10. **What are the basic components of cell?**
    Ans. The basic components of cell are-
    a. Cell wall (Only in Plant Cell)
    b. Cell membrane
    c. Cytoplasm
    d. Nucleus

11. **What is Cell Wall?**
    Ans. It is a thick rigid layer present outside the cell membrane of plant cell.
    - It is made up of cellulose, calcium pectate and Magnesium Pectate.
    - Cell wall is non leaving in nature.

12. **What are the functions of Cell wall?**
    Ans. The functions of Cell wall are
    a. It provides protection against variant in temperature, high wind speed, atmospheric moisture etc.
    b. It provides Mechanical Strength
    c. It controls the shape and size of the cell.
13. **What is Cell Membrane?**
    Ans. Cell Membrane is a thin outer protective covering which enclose the cytoplasm and other cell organelles.
    It is also known as plasma membrane.
    This membrane separates the cells from one another and also the cell from the surrounding medium.
    It is made up of lipids and proteins.
    It is porous and allows the movement of certain substance in and out of the cell.

14. **What are the functions of Cell Membrane?**
    Ans. The functions of Cell Membranes are
    a. It provides protection to the cell.
    b. It gives shape to the cell
    c. It allows transport of materials in and out of the cell.

15. **What is Nucleus?**
    Ans. A nucleus is defined as a double-membraned eukaryotic cell organelle that contains the genetic material.

16. **Write the structure of Nucleus.**
    Ans. The structure of the Nucleus is as below.

- Typically, it is the most evident organelle in the cell.
- The nucleus is completely bound by membranes.
- It is engirdled by a structure referred to as the nuclear envelope.
- The membrane distinguishes the cytoplasm from the contents of the nucleus
- The cell's chromosomes are also confined within it.
- DNA is present in the Chromosomes, and they provide the genetic information required for the creation of different cell components in addition to the reproduction of life.

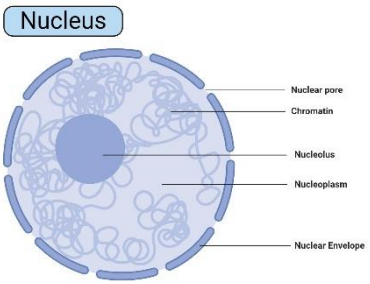


Figure: Nucleus, Image Copyright Sagar Aryal, www.microbenotes.com

17. **What are the functions of Nucleus?**

Ans. Following are the important nucleus function:

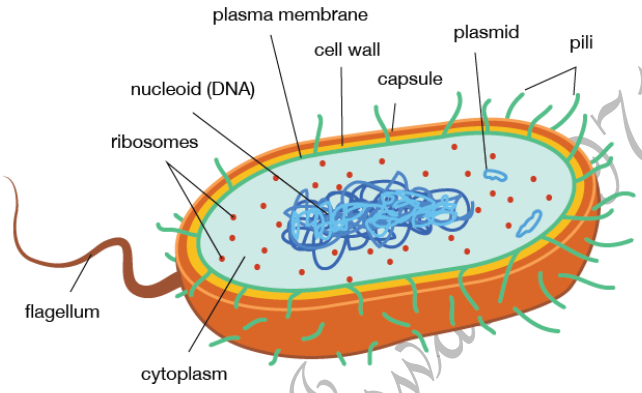
- It contains the cell's hereditary information and controls the cell's growth and reproduction.
- The nucleus has been clearly explained as a membrane-bound structure that comprises the genetic material of a cell.
- It is not just a storage compartment for DNA, but also happens to be the home of some important cellular processes.
- First and foremost, it is possible to duplicate one's DNA in the nucleus. This process has been named DNA Replication and produces an identical copy of the DNA.
- Producing two identical copies of the body or host is the first step in cell division, where every new cell will get its own set of instructions.

- Secondly, the nucleus is the site of transcription. Transcription creates different types of RNA from DNA. Transcription would be a lot like creating copies of individual pages of the human body's instructions which may be moved out and read by the rest of the cell.
- The central rule of biology states that DNA is copied into RNA, and then proteins.

18. What is Prokaryotic Cell?

Ans. Prokaryotic cells are single-celled microorganisms known to be the earliest on earth. Prokaryotes include Bacteria and Archaea. The photosynthetic prokaryotes include cyanobacteria that perform photosynthesis.

A prokaryotic cell consists of a single membrane and therefore, all the reactions occur within the cytoplasm. They can be free-living or parasites.



19. What are the Characteristics of Prokaryotic Cells?

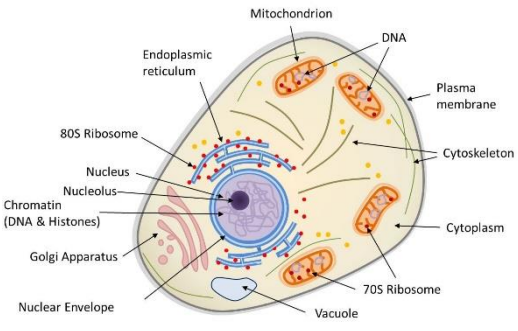
Ans. Characteristics of Prokaryotic Cell

The characteristics of the prokaryotic cells are mentioned below.

a. They lack a nuclear membrane.
b. Mitochondria, Golgi bodies, chloroplast, and lysosomes are absent.
c. The genetic material is present on a single chromosome.
d. The histone proteins, the important constituents of eukaryotic chromosomes, are lacking in them.
e. The cell wall is made up of carbohydrates and amino acids.
f. The plasma membrane acts as the mitochondrial membrane carrying respiratory enzymes.
g. They divide asexually by binary fission. The sexual mode of reproduction involves conjugation.

20. What is Eukaryotic Cell?

Ans. Eukaryotic cells have a nucleus enclosed within the nuclear membrane and form large and complex organisms. Protozoa, fungi, plants, and animals all have eukaryotic cells. They can maintain different environments in a single cell that allows them to carry out various metabolic reactions. This helps them grow many times larger than the prokaryotic cells



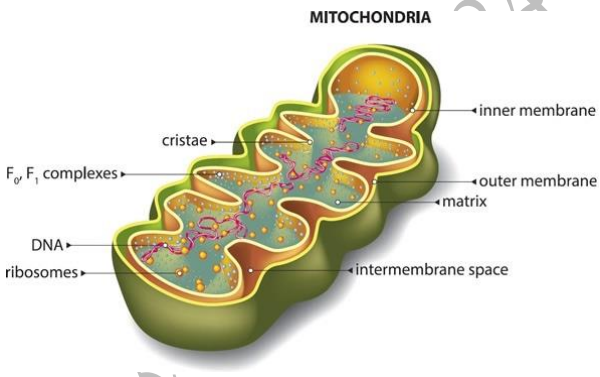
21. What are the characteristics of Eukaryotic Cell?

Ans. The features of eukaryotic cells are as follows:

a. Eukaryotic cells have the nucleus enclosed within the nuclear membrane.
b. The cell has mitochondria.
c. Flagella and cilia are the locomotory organs in a eukaryotic cell.
d. A cell wall is the outermost layer of the eukaryotic cells.
e. The cells divide by a process called mitosis.
f. The eukaryotic cells contain a cytoskeletal structure.
g. The nucleus contains a single, linear DNA, which carries all the genetic information.

22. What are Mitochondria?

Ans. Mitochondrion, membrane-bound organelle found in the cytoplasm of almost all eukaryotic cells, the primary function of which is to generate large quantities of energy in the form of adenosine triphosphate (ATP). Mitochondria are typically round to oval in shape and range in size from 0.5 to 10 µm.



23. What is Cytoplasm?

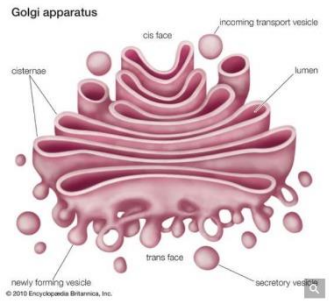
Ans. It is a jelly-like substance present between Cell Membrane and Nucleolus. Various living components known as Cell Organelles are present in the Cytoplasm. Various life functions performed by the cell organelles take place inside the cytoplasm.

24. What are Ribosomes?

Ans. Ribosomes are small granular organelles which help in protein synthesis. They are found free in surface of cytoplasm or located on the endoplasmic reticulum.

25. What is Golgi Body?

Ans. Golgi apparatus, also called Golgi complex or Golgi body, membrane-bound organelle of eukaryotic cells (cells with clearly defined nuclei) that is made up of a series of flattened, stacked pouches called cisternae. The Golgi apparatus is responsible for transporting, modifying, and packaging proteins and lipids into vesicles for delivery to targeted destinations. It is located in the cytoplasm next to the endoplasmic reticulum and near the cell nucleus.



26. What is Centrosome?

Ans. Centrosome are rounded bodies found in animal cells. It helps the cell division.

27. What are Lysosomes?

Ans. Lysosomes are sac like structure, which contains digestive enzymes to digest microbes, food particles and worn out cells.

28. What are Plastids?

Ans. Plastids are mainly present only in plants and cyanobacteria. They are several small coloured bodies scattered in the cytoplasm of leaf cells.

How many types of Plastids are present in Plant Cell?

Ans. Plant Cell have three types of Plastids

a. Chloroplast
b. Leucoplasts
c. Chromoplast

29. What is Chloroplast?

Ans. Chloroplasts are Green coloured plastids the green color is due to the presence of pigment chlorophyll. Chlorophyll absorbs energy and is compulsory for the process of photosynthesis.

30. What ate Chromoplasts?

Ans. Chromoplasts are Coloured Plastids, which provide colors to different parts of the plant (flowers and fruits). They manufacture and accumulate carotenoid pigments.

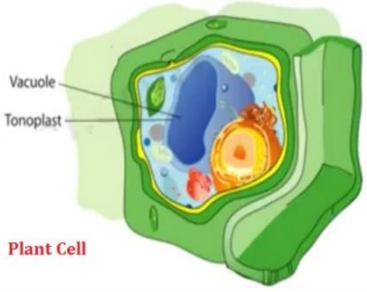
31. What are Leucoplasts?

Ans. Colorless plastids occur in the storage part of the plant.

32. What is Vacuole?

Ans. Vacuoles are the blank spaces found in the cytoplasm.

They contain substances dissolved in water. This fluid is known as Cell-sap.



33. Write the Similarity and difference between Plant Cell and Animal Cell

Ans.

Part of the Cell	Plant Cell	Animal Cell
Shape of the cell	Quadrangular or hexagonal	Round
Cell wall	Distinct Cell Wall and protective in function	Absent
Nucleus	Present	Present
Nuclear membrane	Present	Present
Cytoplasm	Present	Present
Plastids	Help plants to synthesize and store their food	Absent
Vacuole	Mostly one and big in size	Many and smaller in size
Cell Membrane	Present	Present
Lysosomes	Absent or scanty	Many
Cilia and flagella	Absent	Present
Centrioles	Absent	Present required for cell division