

St. Andrews Scots Sr. Sec. School

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Session: 2022-2023- Notes

Class:IX

Subject: Biology

Lesson: 5

Topic: The Fundamental Unit Of Life (Part-1)

Introduction

The body of all organisms is made up of very small units called cell.

A cell is capable of independent existence and can carry out all the functions which are necessary for a living being. Unicellular organisms are capable of independent existence which shows a cell's capability to exist independently like in amoeba. Due to this, a cell is called the fundamental, structural and functional unit of living organisms and basic unit of life.

Discovery of Cell and Cell Theory

Cell was first discovered by Robert Hooke in 1665. He observed that just like honeycomb, organisms are also composed of small compartments. He named these compartments as Cells.

Cell theory state that:

All living organisms are composed of cells.

- Cell is the fundamental unit of life.
- All new cells come from pre-existing cells.

Types of Organisms on the Basis of Number of Cells

There are two kinds of organisms on the basis of cells:

(i) Unicellular Organisms: The organisms that are made up of single cell and may constitute a whole organism, are named as unicellular organisms.

For example: Amoeba, Paramecium, bacteria, etc.

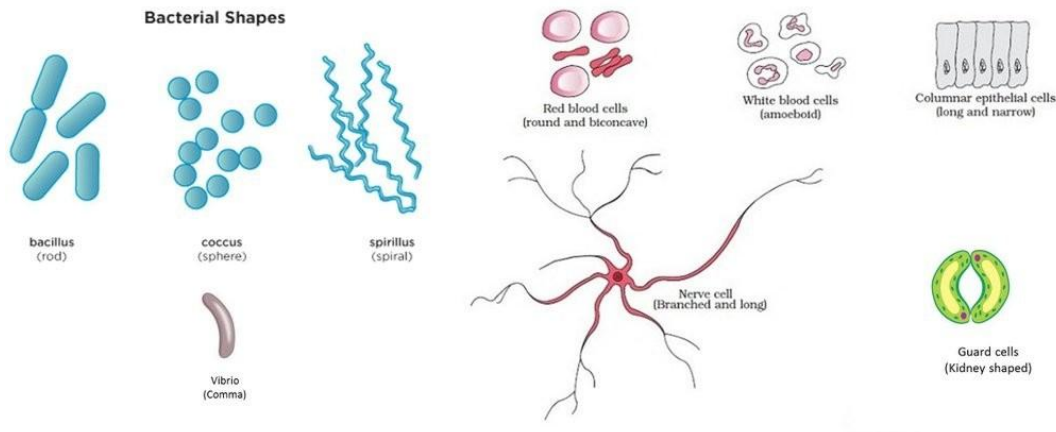
(ii) Multicellular Organisms: The organisms which are composed of a collection of cells that assume function in a coordinated manner, with different cells specialized to perform particular tasks in the body, are named as multicellular organisms.

For example: Plants, human beings, animals, etc.

Shape and Size of Cells

→ Cells vary in shape and size. They may be oval, spherical, rectangular, spindle shaped, or totally irregular like the nerve cell.

→ The size of cell also varies in different organisms. Most of the cells are microscopic in size like red blood cells (RBC) while some cells are fairly large like nerve cells.



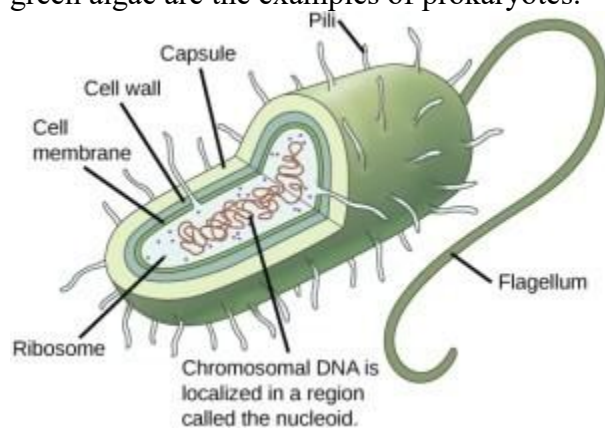
Types of Cells:

The cells can be categorized in two types :

1. Prokaryotic Cell
2. Eukaryotic Cell

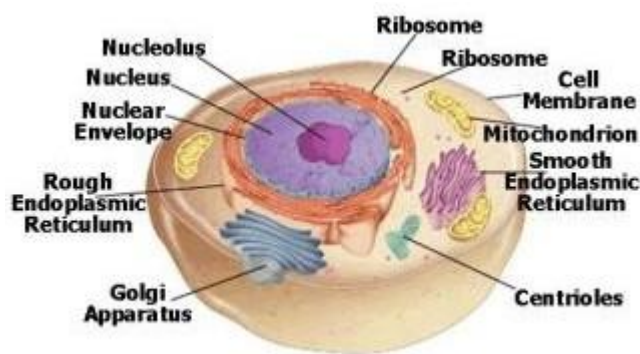
Prokaryotic cell

In some organisms, DNA and RNA (genetic substances) are bound by a membrane; this is termed as true nucleus. Prokaryotic cells are cells in which true nucleus is absent. They are primitive and incomplete cells. Prokaryotes are always unicellular organisms. Bacteria, blue green algae are the examples of prokaryotes.



Eukaryotic Cell

Eukaryotic cells are cells in which true nucleus is present. They are advanced and complete cells. Eukaryotes include all living organisms (both unicellular and multicellular organisms) except bacteria and blue green algae.



Difference Between Prokaryotic and Eukaryotic Cells:

S. No.	Prokaryotic cell	Eukaryotic cell
1.	Size of cell is generally small (1-10 μ m).	
2.	Nucleus is absent.	Nucleus is present.
3.	It contains single chromosome.	It contains more than one chromosome.
4.	Nucleolus is absent.	Nucleolus is present.
5.	Membrane bound cell organelles are absent.	Membrane bound cell organelles such as mitochondria, plastids, endoplasmic reticulum, golgi apparatus, lysosomes, etc., are present.
6.	Cell division takes place by fission or budding.	Cell division takes place by mitotic or meiotic cell division.

