Zoology

Zoology or animal biology, is the branch of biology that relates to the animal kingdom, including the structure, embryology, evolution, classification, habits, and distribution of all animals, both living and extinct.

Zoology has been sub-divided of a few special sciences are :

Anatomy: structure revealed by dissection.

Morphology: structure as a whole (outer shape).

Histology: microscopic structure of tissues.

Physiology: function within animals.

Nutrition: used conversion of food substances.

Embryology: growth and development within the egg or mother.

Genetic: heredity and variation.

Ecology: relation of animals to their environment.

Zoogeography: geographical distribution of animals.

Evolution: origin and differentiation of animal life.

Taxonomy: laws and principle of classification.

Cytology: structure and function within cells.

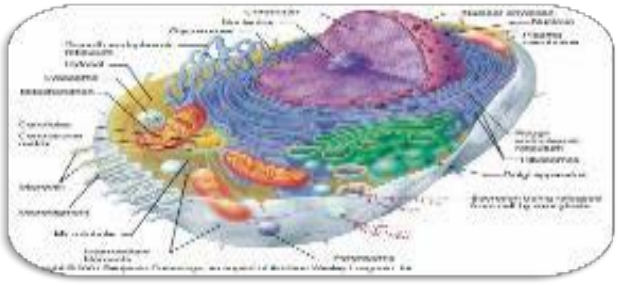
Pathology: nature of diseases, their causes and symptoms.

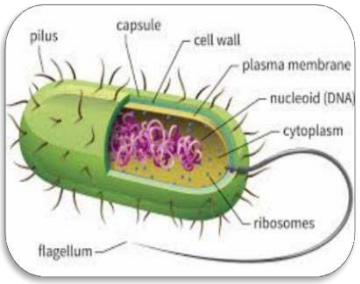
Psychology: science of the mental life and behavior of animals.

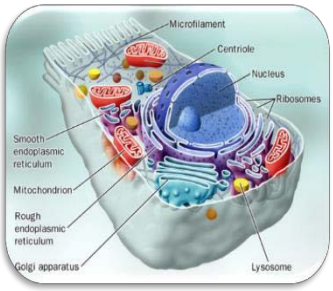
Animal Cell

The Cell :-

Is the basic structural, functional, and biological unit of all known organisms. A cell is the smallest unit of life. Cells are often called the "building blocks of life".







All cells fall into two major categories

Prokaryotic (bacteria, archaea)

(protists, fungi, plants, animals)

Archaea are single-celled microorganisms with structure similar to bacteria

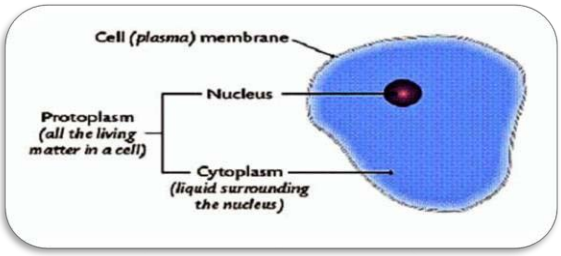
	Eukaryotic Cells	Prokaryotic cells
Nucleus	Present	Absent
Number of chromosomes	More than one	One--but not true chromosome: Plasmids
Cell Type	Usually multicellular	Usually unicellular (some cyanobacteria may be multicellular)
True Membrane bound Nucleus	Present	Absent
Lysosomes and peroxisomes	Present	Absent
Endoplasmic reticulum	Present	Absent
Mitochondria	Present	Absent
Golgi apparatus	Present	Absent

Cell content

Protoplasm:

The protoplasm is the cell's living content. It is composed primarily of biomolecules such as nucleic acids, proteins, lipids, and carbohydrates. It also has inorganic salts and water molecules. The protoplasm is surrounded by the cell membrane.

It includes the ground substance cytoplasm having nucleus and limited by cell membrane



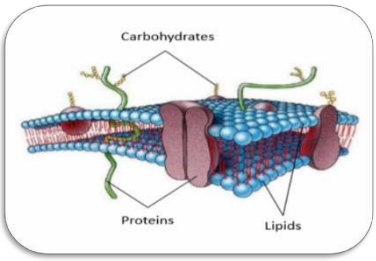
1- Plasma Membrane

Extremely delicate, thin, elastic, living a n d semi-permeable membrane

Functions:

- Maintains shape & size of the cell
- Protects internal contents of the cell
- Regulates entry and exit of substances in and out of the cell

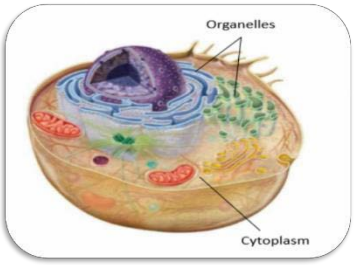
Maintains homeostasis



2- Cytoplasm

Functions:

This matrix maintains the pressure of the cell, ensures the cell doesn't shrink or burst.



3- Nucleus

Dense spherical body located near the center of the cell.

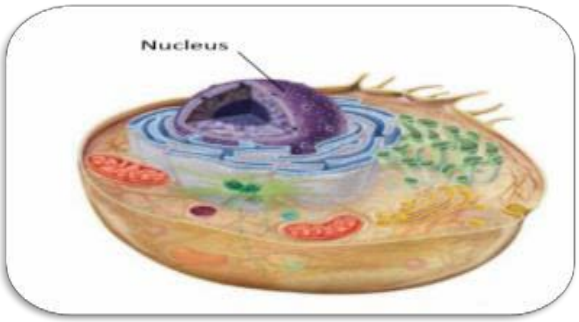
Nucleus has a double layered covering called nuclear membrane

Functions:

•Control all the cell activities like metabolism, protein synthesis, growth and cell division

•Nucleolus synthesizes ribonucleic acid (RNA) to constitute ribosomes

Store hereditary information in genes



4- Centrosome

• Centrosome is the membrane bound organelle present near the nucleus

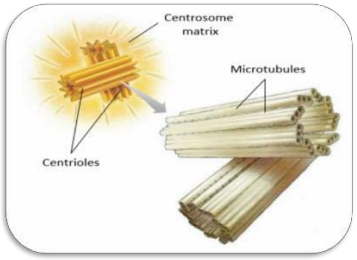
•Consists of two structures called centrioles

Centrioles are hollow, cylindrical structures made of microtubules

Functions:

•Form spindle fibers which help in the movement of chromosomes during cell division

•Help in the formation of cilia and flagella



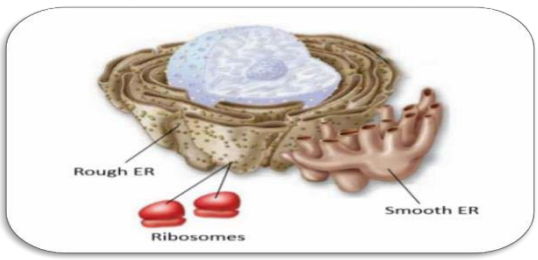
5- Endoplasmic Reticulum

Are networks of membranes composed of: -

Rough endoplasmic reticulum.

Smooth endoplasmic reticulum.

Functions:



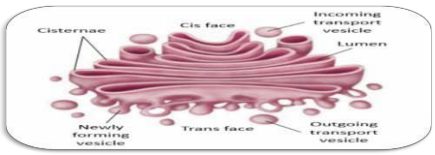
•Gives internal support to the cytoplasm
RER synthesize secretory proteins and
•membrane proteins
SER synthesize lipids for cell membrane

6- Golgi complex

They are flattened stacks of membrane-bound sacs, is responsible for storing, packaging of cellular products.
Golgi Apparatus are the packaging center of the cell.

Functions:

The Golgi Apparatus modify the molecules from the rough ER by dividing them into smaller units with membrane known as vesicles.
Forms plasma membrane and lysosome.

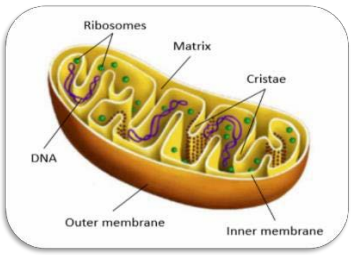


7- Mitochondria

Small, rod shaped organelles bounded by two membranes :-
inner and outer.
The mitochondria are referred to as the power house of the cell.

Functions:

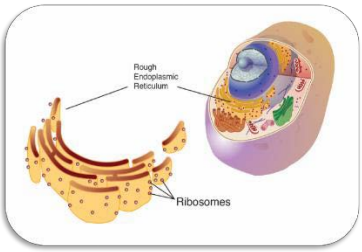
Its main function is to produce energy for cell by the process of cellular respiration.
The energy produced is ATP.



8- Ribosomes

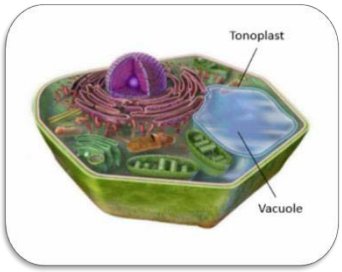
Are made of RNA and proteins, and are sites for protein synthesis.
Functions:
Ribosomes is the site for protein synthesis where the translation of the RNA

takes place.
As protein synthesis is very important to the cell, ribosomes are found in large number in all cells.



9- <u>Vacuole</u>

Single membrane sac filled with liquid or sap (water, sugar and ions)
May be contractile or non-contractile
Functions:
Store various substances including waste products
Maintain osmotic pressure of the cell
Store food particles in amoeba cells



Cell membrane