



جامعة الأنبار
كلية العلوم
قسم التقنيات الاحيائية



المادة : علم الحيوان
المادة باللغة الإنكليزية : Zoology

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المحاضرة الرابعة

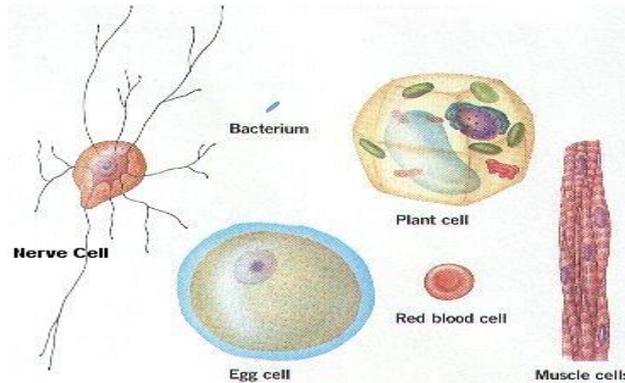
The Cell

The Cell

The cell is the smallest living unit of structure and function of all organisms. All organisms are composed one or more cells. New cells arise from previously existing cells.

Female Egg - largest cell in the human body; seen without the aid of a microscope. Most cells are visible only with a microscope.

- The shape of a cell depends on its function.



Different shapes of cells

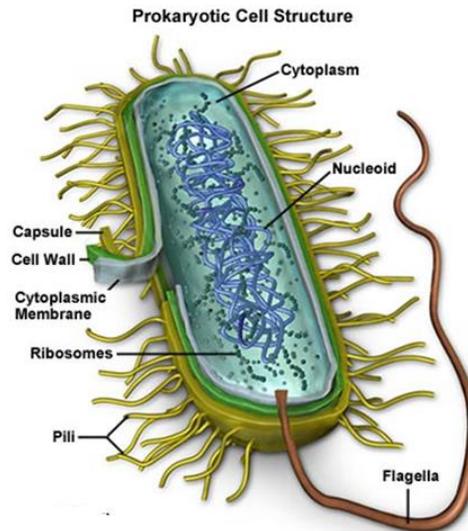
❖ Two fundamental types:

■ Prokaryotic

No Nucleus

No organelles

Small 100nm-5um



■ Eukaryotic

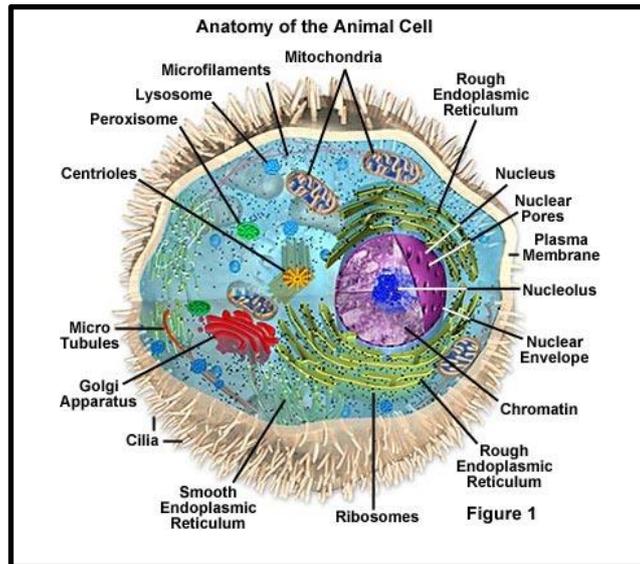
True Nucleus

Membrane bound

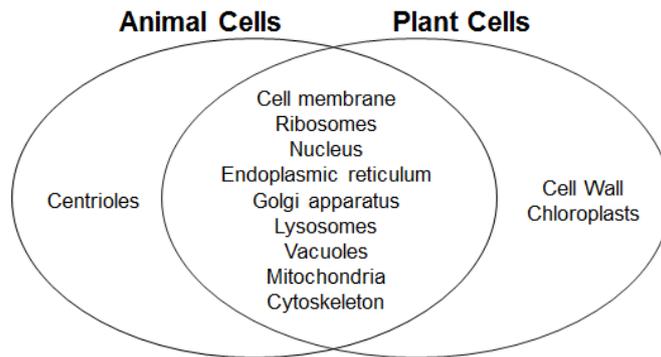
organelles

size 10-100um

Some are larger



❖ Compare and Contrast



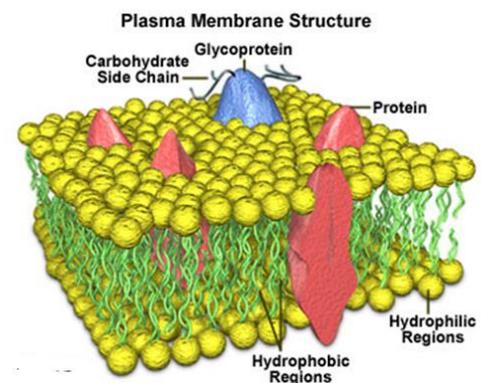
❖ Internal Organization

Cells contain ORGANELLES. Cell Components that performs specific function for the cell.

Cellular Organelles

■ The Plasma membrane

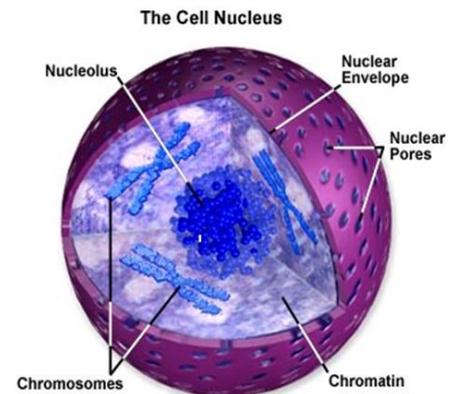
- The boundary of the cell.
- Composed of three distinct layers.
 Two layers of fat and one layer of protein
 What is the function of this membrane?



■ The Nucleus

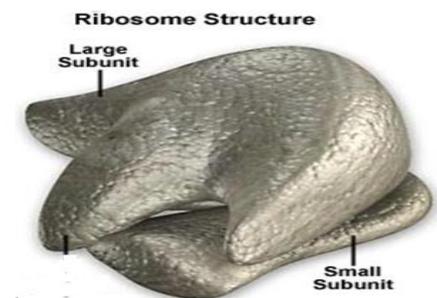
○ **Brain of Cell**

- Bordered by a porous membrane - nuclear envelope.
- Contains thin fibers of DNA and protein called Chromatin.
- Rod Shaped Chromosomes
- Contains a small round nucleolus produces ribosomal RNA which makes ribosomes.



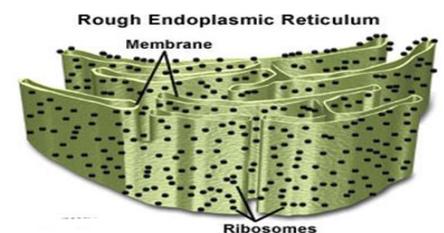
■ Ribosomes

- Small non-membrane bound organelles.
- Contain two sub units
- Site of protein synthesis.
- Protein factory of the cell
- Either free floating or attached to the Endoplasmic Reticulum.



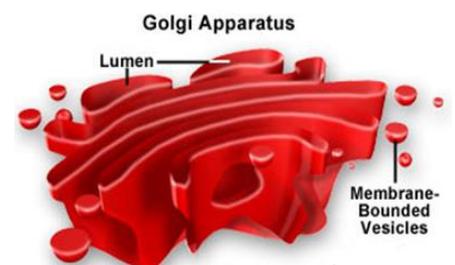
■ Endoplasmic Reticulum

- Complex network of transport channels.
- Two types:
Smooth- ribosome free and functions in poison detoxification.
Rough - contains ribosomes and releases newly made protein from the cell.



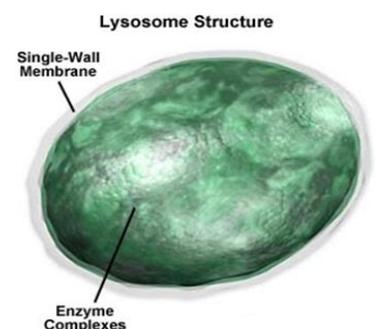
■ Golgi Apparatus

- A series of flattened sacs that modifies, packages, stores, and transports materials out of the cell.
- Works with the ribosomes and Endoplasmic Reticulum.



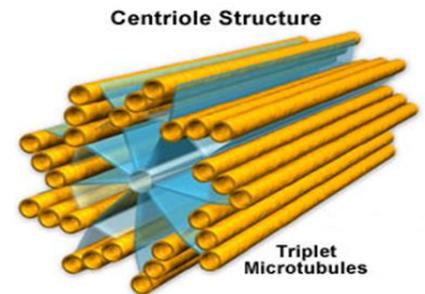
■ Lysosomes

- Recycling Center
 - Recycle cellular debris
- Membrane bound organelle containing a variety of enzymes.
- Internal pH is 5 why?.
- Help digest food particles inside or out side the cell.



■ Centrioles

- Found **only** in animal cells
- Paired organelles found together near the nucleus, at right angles to each other.
- Role in building cilia and flagella
- Play a role in cellular reproduction

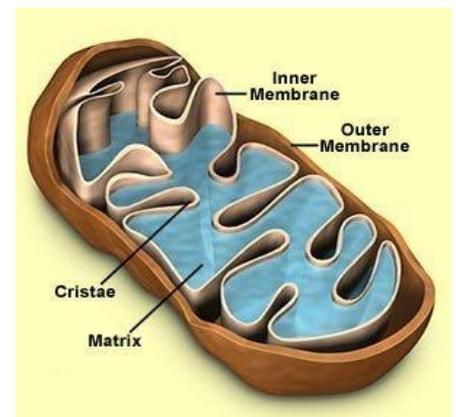


■ Cytoskeleton

- Framework of the cell
- Contains small microfilaments and larger microtubules.
- They support the cell, giving it its shape and help with the movement of its organelles.

■ Mitochondrion

- Double Membranous
- It's the size of a bacterium
- Contains its own DNA
- Produces high energy compound ATP



■ The Vacuole

- Sacs that help in food digestion or helping the cell maintain its water balance.
- Found mostly in plants and protists