

## **Nucleus**

**Nucleus:** is a membrane-bound organelle found in eukaryotic cells. Eukaryotes usually have a single nucleus, but a few cell types, such as mammalian red blood cells, have no nuclei, and a few others including osteoclasts have many.

### **Parts of cell nucleus:**

**1-Nuclear membrane:** The nucleus is separated from the cytoplasm by a limiting membrane called nuclear membrane. This membrane plays an important role for the transport of the material between the nucleus and the cytoplasm. Nuclear envelope regulates nucleocytoplasmic exchanges and coordinates gene action with cytoplasmic activity.

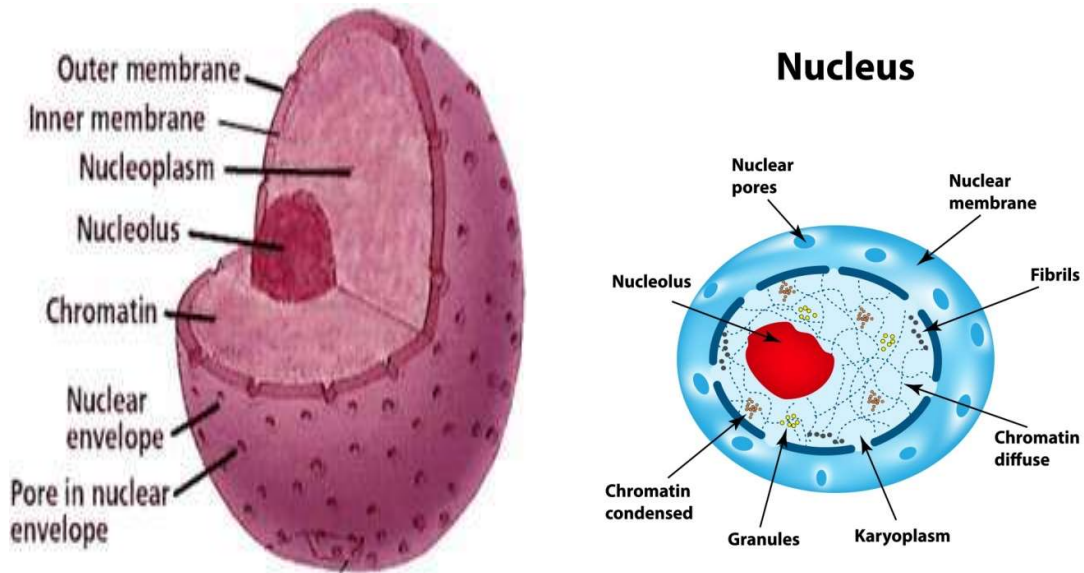
**2- Nuclear sap or nucleoplasm:** The nucleus contains a transparent, semi-solid, granular and homogeneous matrix during interphase called as nuclear sap or karyolymph (enchylema). This karyolymph is a fluid substance containing many particles and network. Primarily it is composed of proteinous material and is the main site for enzyme activity. This nuclear sap also shows variable appearance during different stages of cell division.

**3-Chromatin, DNA plus histones:** DNA is the main genetic constituent of cells, carrying information in a coded form from cell to cell and from organism to organism. Within cells, DNA is not free but is complexed with proteins in a structure called chromatin.

**4-Nucleolus:** Embedded in the matrix of nucleus there is a dense rounded, oval and acidophilic body called as nucleolus. Nucleolus has no membrane of its own and is more dense than the surrounding nucleoplasm and hence is distinctly visible.

#### **5-Endosomes:**

These are rather smaller chromatin bodies present in the nucleoplasm of nucleus. They are like nucleolus but smaller in size, showing changeable structure.



Parts of cell nucleus (WWW.msad54.org)

### Function of nucleus:

- 1-Nucleus contains all the genetic information in its chromatin.
- 2-Nucleus take part in transmission of genetic information from parent cell to its daughter cells and from one generation to the next.
- 3-Division of nucleus is pre requisite to cell division.
- 4-Nucleus forms ribosomes on its nucleolus.
- 5-They develop due to changes in genetic material contained in the nucleus.
- 6-It maintains cellular metabolism through controlling synthesis of particular part of enzymes.
- 7-Differential functioning of genes result in cell differentiation and development of particular morphology.
- 8- Newly formed cell grow in size and become mature with the help of structural proteins and other substances formed on instructions from genes contained in chromatin.