

NUCLEOLUS AND NUCLIC ACIDS

WHAT THE NUCLEUS?

➤ **Nucleus**: in biology, a specialized structure occurring in most cells (**except bacteria and blue-green algae**) and separated from the rest of the cell by a double layer, the nuclear membrane ➤ This membrane seems to be continuous with the endoplasmic reticulum (a membranous network) of the cell and has pores, which probably permit the entrance of large molecules

WHAT THE NUCLEUS?

➤ The nucleus controls and regulates the activities of the cell (**e.g., growth and metabolism**) and carries the genes, structures that contain the **hereditary information**

➤ Nucleoli are small bodies often seen within the nucleus

➤ The gel-like matrix in which the nuclear components are suspended is the nucleoplasm.

WHAT THE NUCLEUS?

The cell normally contains only **one nucleus**. Under some conditions, however, the nucleus divides but the **cytoplasm does not**

- This produces a multinucleate cell (**syncytium**) such as occurs in **skeletal muscle fibers**
 - Some cells—**e.g., the human red blood cell**—lose their nuclei upon maturation
- The cell nucleus contains all of the cell's genome, **except** for the small amount of mitochondrial DNA and, in plant cells, plastid DNA

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.

WHAT NUCLEIC ACID?

- Nucleic acids are biopolymers, macromolecules, essential to all known forms of life.
- They are composed of nucleotides, which are the monomers made of three components: a 5-carbon sugar, a phosphate group and a nitrogenous base.
- The two main classes of nucleic acids are deoxyribonucleic acid and ribonucleic acid.

WHAT NUCLEIC ACID?

- naturally occurring chemical compound that is capable of being broken down to yield phosphoric acid, sugars, and a mixture of organic bases (purines and pyrimidines)
- Nucleic acids are the main information-carrying molecules of the cell, and, by directing the process of protein synthesis, they determine the inherited characteristics of every living thing

TYPE OF NUCLEIC ACID

- The two main classes of nucleic acids are deoxyribonucleic acid (DNA) and ribonucleic acid (RNA)
 - DNA is the master blueprint for life and constitutes the genetic material in all free-living organisms and most viruses
 - RNA is the genetic material of certain viruses, but it is also found in all living cells, where it plays an important role in certain processes such as the making of proteins.

TYPE OF NUCLEIC ACID

- The nucleic acids, the vital constituents of living beings, are long-chain polymers composed of nucleotides.
- Nucleic acids were named based partly on their chemical properties and partly on the observation that they represent a major constituent of the cell nucleus