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Nucleus is differentiated into following four parts

i. Nuclear Envelope

It is a double membrane bound envelope that surround the nucleus and separates the latter from the cytoplasm.

ii. Nucleoplasm

It is a clear, non-staining, fluid material present in the nucleus, which contains raw materials (nucleotides), enzymes (DNA/RNA polymerases) and metal ions for the synthesis of RNAs and DNA. The nuclear matrix or the nucleoplasm is composed of nucleolus and chromatin (spherical structures present in the nucleoplasm).

iii. Nucleolus

It is a naked, round and slightly irregular structure, which is attached to the chromatin at a specific region. The content of nucleolus is continuous with the rest of the nucleoplasm as it is not a membrane bound structure.

It is a site for active ribosomal RNA synthesis. Larger and more numerous nucleoli are present in cells actively carrying out protein synthesis.

Chromatin

It is named so, because it has the ability to get stained with certain basic dyes. It is known to be the hereditary DNA protein fibrillar complex. The chromatin fibres are distributed throughout the nucleoplasm.

It has two distinct regions

- (a) Euchromatin (lightly stained)
- (b) Heterochromatin (darkly stained)

Functions

Nucleus possess the following functions

- (i) It stores information that control cellular functions.
- (ii) It controls the synthesis of structural proteins.
- (iii) It also stores the genetic information for development reproduction and behaviour.
- (iv) It also induces genetic variations.