Ch 6.3

In a *Eukaryotic Cell* the genetic instructions are housed in the nucleus and carried out by the ribosomes

The **Nuclear Envelope** encloses the nucleus separating its contents from the cytoplasm

* Note: The Nuclear Envelope is a double membrane which as the name implies has two membranes. Each a lipid bilayer with associated proteins. (Each membranes have a gap of about 20 - 40 nm)
* Note 2: The envelope is performed by pore structures that are about 100 nm in diameter. At the lip of each pore, the inner and other membranes of the nuclear envelope are continuous.
  + An intricate protein structure called a **Pore Complex** line each pore and plays an important role in the cell by regulating the entry and exit of proteins and RNAs, as well as large complexes of macromolecules.
    - The nuclear side of the envelope is lined by **Nuclear Lamina** which is a netlike array of protein filaments (In animal cells called *Intermediate Filaments*) that maintain the shape of the nucleus by mechanically supporting the envelope.
      * There is also a **Nuclear Matrix** which is a framework of protein fibers extending throughout the nuclear interior.
      * Note: The nuclear lamina and matrix may help organize the genetic material, so it functions differently.

Within the nucleus the DNA is organized into discrete units called **chromosomes**. Which are structures that carry the genetic information. Each chromosome contains one long DNA molecule.

**Nucleolus** is a prominent structure within the nondividing nucleus in which a type of RNA called *ribosomal* is synthesized.

**Chromatin** is the complex of proteins and DNA making up chromosomes