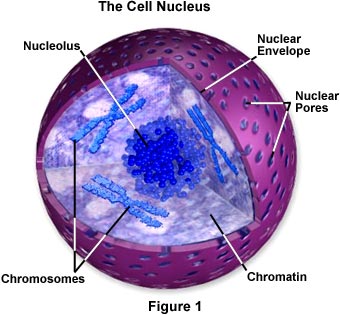
**4.1 Notes: The Nucleus, Control Centre of the Cell**

(Refer to pgs. 125 – 132 in textbook)

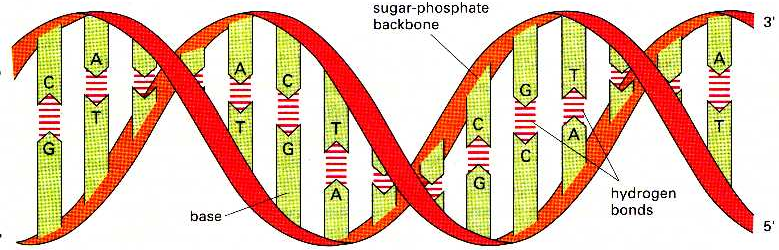
**Nucleus Role**

Each \_\_\_\_\_\_\_\_ in your body has one nucleus. The nucleus contains genetic material in the form of \_\_\_\_\_\_\_ molecules that together code for proteins which determine the structure and function of each cell.   
This is why we say that the nucleus is the **control centre of the cell.**



**DNA carries the master set of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for cell function**

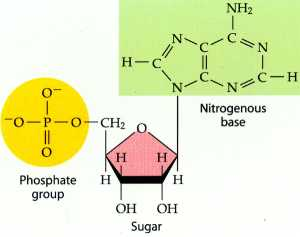
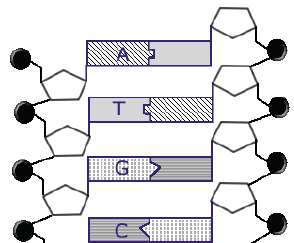
DNA stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_. The DNA molecule looks like a twisted ladder that can be described as a double \_\_\_\_\_\_\_\_\_\_\_. The 3 basic parts that make up this ladder are \_\_\_\_\_\_\_\_\_\_\_\_ and phosphate on the sides and four nitrogen bases combine in pairs to make the steps.



**Nitrogen Bases**

There are \_\_\_\_\_ different types of bases: A (\_\_\_\_\_\_\_\_\_\_\_), G (\_\_\_\_\_\_\_\_\_\_\_), C(\_\_\_\_\_\_\_\_\_\_\_),  
 and T (\_\_\_\_\_\_\_\_\_\_\_). The order of the bases forms the “genetic code” and determines the types of proteins created. The bases are always paired along the steps of the ladder in a specific way. Adenine always joins with \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_ always joins with Cytosine.

The diagram that follows shows an example of a segment of a DNA molecule (***please fill in the missing bases***):

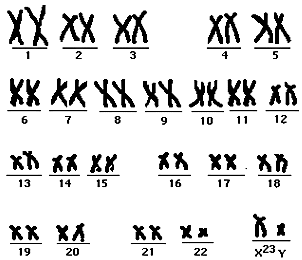
 

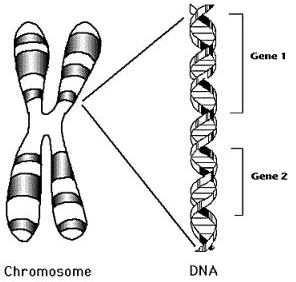
An example of a sequence of bases which form part of the genetic code is   
(write the matching base below each letter):



The arrangement of these bases provides a set of instructions coded for by the DNA molecule. It is this set of instructions that determines which proteins are produced by each cell. This in turn determines the structure and function of every part of every living creature. The code differs depending on the species.

Chromosomes, Genes and Proteins

Most of the time, DNA exists in the \_\_\_\_\_\_\_\_\_\_\_ in the form of \_\_\_\_\_\_\_\_\_\_\_\_\_. When a cell is ready to divide, DNA is coiled up into very compact, \_\_\_\_-shaped structures called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Human beings have 23 *pairs* of chromosomes (or \_\_\_\_\_ chromosomes altogether). The 23rd pair determines the sex of the individual. In males, the 23rd pair is \_\_\_\_\_ while in females, it is XX. Different organisms have different numbers of chromosomes. For Example, corn has \_\_\_\_\_ chromosomes, while a bat has \_\_\_\_\_.

Genes are \_\_\_\_\_\_\_\_segments of DNA located at specific places on a chromosome. They store the information needed to produce up to 100 000 different \_\_\_\_\_\_\_\_\_\_\_\_ used in the cells of your body. The order of bases within a gene determines the protein it produces.

PROTEINS

Two types of proteins produced are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (which speed up chemical reactions in the cell) and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (which act as chemical messengers).

*Every cell in your body contains the same genes, but only certain genes are used to produce specific proteins. For example, in your eye, only the genes relevant to eyesight and structure of your eye are “turned on” to produce the appropriate proteins for that area.*

**How Proteins are Produced** (please summarize in your own words)

|  |  |
| --- | --- |
|  |  |

*Complete:* textbook p. 135 #1, 4, 5, 6, 10, 11,13, 15, 16 (for marks)