PACKAGING OF DNA MOLECULE

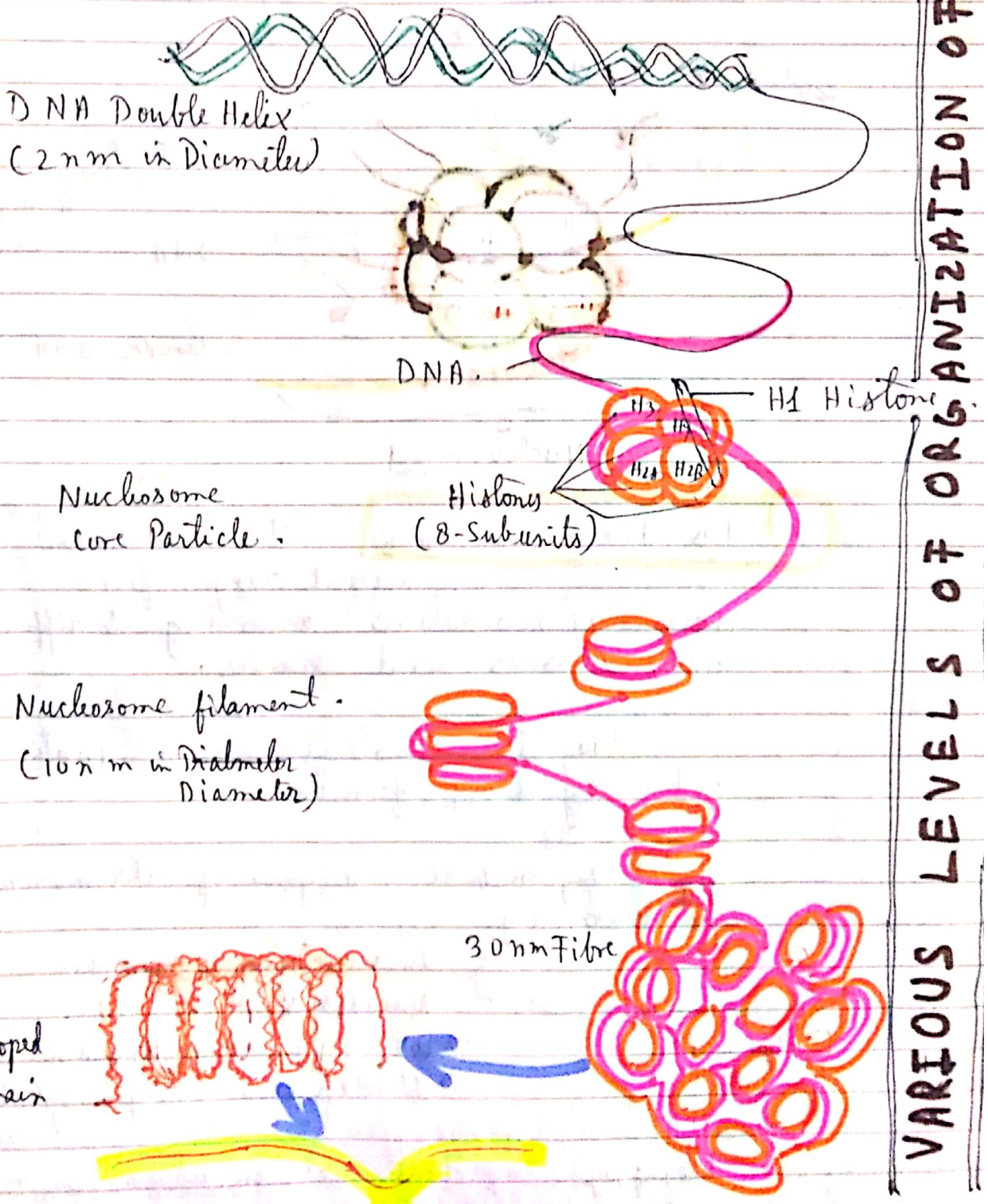
It is evident that DNAs are responsible every function of an organism. The amount of DNA in us are as much as we can travelled to and fro about three hundred times.

In haploid number of chromosome in human being is twenty three. It include about three(3) Billion (3×10^9) base pairs. Each base pair is about 3.4A° or 0.3 nanometer long. Each diploid cell possess about two(02) meters of DNA $(0.34 \times 10^{-9}) \times (6 \times 10^9)$. A normal human body is made up of about fifty (50) trillion cells. Hence there should be one hundred trillion ∞ meters of DNA in human body. The distance between Sun and earth is about 150 billion meters. The length of DNA rap the equator about 2.5 million times.

The DNA related to chromosomes are known as chromosomal DNA. These are packed in chromosomes with the help of Histones. There are eight histones forming a positively charged core around which the negatively charged DNA molecules are wrapped. Thus a complex structure is formed known as Nucleosome.

Nucleosomes fold upto and form a thirty 30-nanometer chromatin fibre which form loops arrange in three hundred (300) nanometers in length.

The 300 nm fibres are compressed and get folded producing two hundred fifty 250 nm wide fibre, which is tightly coiled into the chromatid of a chromosome.



GENE

Research spl in Genetics & molecular biology

Concept of gene has been changing.

Mendel (1866) First to visualise a gene as a unit of inheritance called it an element.

Correns (1900) termed it factor

Gametes brought from the parents distinct particulate elements (factors) which made their respective characters appear in off-springs.

Johanson (1909) introduced the word gene for a single unit of heridity occupying a specific position (locus) in a chromosome.

— Genes are in linear order
— Behaviour of genes and chromosomes are found parallel

Classical

— Unit of inheritance
— Carried from parents to gametes in a chromosome
— Controls specific function (trait) in the young one in co-operation with its allele, other genes and environment.

Modern Concept.

→ A unique sequence of DNA pairs.
→ Unit of recombination.
→ " mutation
→ ——— code for single protein (Enzyme)
→ ——— Code ——— peptide
→ " function
→ Segment of nucleic acid.
→ Unit sequence of nucleotide base pair.

Synthetic Depit Definition

1) is a segment of nucleic acid usually DNA, rarely RNA.
2) Occupies a specific locus;
3) has a unique sequence of nucleotide base pairs
4) carries a coded information for a specific polypeptide or one r RNA or one t RNA, or a polyprotein or has a regulatory role.
5) Undergo crossing over and mutation.
6) may have continuous or split information.
7) able to replicate itself.
8) can can produce phenotypic expression.
— But it lacks precision.

It doesn't
→ One gene influencing many traits (Pleiotropism).
→ many genes determining one trait (Polygenes)
→ Overlapping ones

[Result] → Unit of Heredity is still valid.