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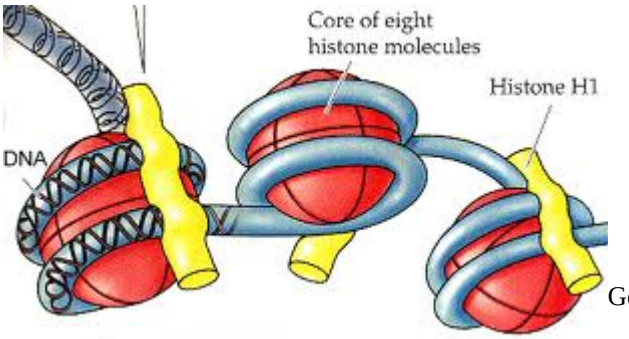
Gene and Gene Organisation

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What is Gene Organisation?

Genes are the segment of DNA.

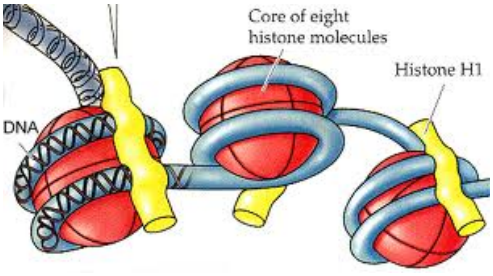


Genes are present in the nucleus of the cell follow many layers of organisation. These organizations enable the long DNA to be in a short compact from into the chromosome fibers. DNA is packed around ‘Histones’ the 4 pairs of proteins in a “beads-on-string” pattern. These nucleosomes in the form of helix coil around each other. Around 6 nucleosomes form a helix. These helices form the long chromatin fibers and it turns and loops form the DNA organisation. Then these chromatin fibers are packed compactly inside the chromosome and are wrapped around a protein scaffold.

What is Genome Organisation?

Genome organization is the sequential and not structural organization of the genome. It has coding and non coding regions.

- **Introns:** DNA sequences inserted between the exons. After the first level of transcription they are spliced and most of the introns are junk inserted within genes.
- **Pseudogenes:** 'Dead', non-functional copies of genes present elsewhere in the genome, but there is no use of it.
- **Retropseudogenes:** These are like pseudogenes only, but lack introns. Produced by the action of reverse transcriptase on mRNA, and subsequent incorporation of the cDNA into the genome.
- **Transposons**: Named as Jumping genes. By the transposase enzyme’s action they splice themselves in and out of the genome randomly.
- **Retrotransposons**: Transcribed into an mRNA, then copies the mRNA back to DNA and incorporates it into the genome.



In fact in humans only 1.5% of the entire genome length corresponds to coding DNA. This 1.5% codes for about 27,000 genes which in turn code for proteins that are responsible for all the cellular processes.

genome. But till now it is not yet possible for the biologists.

What is Genome Analysis?

Genome analysis is predicting of genes and its sequences. Some model organisms have been sequenced in plant kingdom and animal kingdom as well.

Gene prediction is simple for the prokaryotes when compared to eukaryotes. Because,DNA coding sequence is interrupted by the introns of eukaryotes.

We still don’t know the answer for the below questions…

- What part of genome codes for a protein and what part of it is junk DNA?
- Classify the junk DNA as intron, untranslated region, transposons, dead genes, regulatory elements etc.

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