Human genome

Science, Biology

Introduction Human genome is a full set of human being genetic information but together as DNA sequences inside 23 chromosome pairs in the nucleus of the body cells and contained in a molecule in mitochondria. The human genome called haploid contain up to 3 billion DNA base pairs while another genome called diploid contain double the DNA content. The three billion components are referred to as nucleotides and are structured into DNA molecules. The nucleotides are represented by 4 letters namely A, C, G, and T, and it stands for adenine, cytosine, guanine, and thymine (International Human Genome Sequencing Consortium 2004). The codes are used by amino acids in the body to build proteins. When 3 nucleotides come together, it shows one of the possible amino acid. It means that when 3 nucleotides combine together, it develops instruction that the body cells will use to build body proteins. The proteins developed carry out the work of the cells starting from development allover the human life contributing to physical attributes and several other features like behavior and learning (International Human Genome Sequencing Consortium 2004).

There exist twenty four different human chromosomes together with sex determining X and Y chromosomes. The genome is divided into two parts, coding and noncoding DNA sequences (Kauffman 1969). Coding DNA are sequences that can be transcribed into mRNA and converted into proteins in the lifetime of a man while noncoding DNA is made up of those sequences that are not used to encode proteins (Kauffman 1969). Noncoding is all the DNA sequences inside the genome which are not found inside the protein coding exons, which means that they are not represented with amino acid proteins. The full protein coding capacity of the genome contained in exome

and it has DNA sequences encoded by exons and this can be converted into proteins. Genome contains several regulatory sequences that are important in controlling gene expression, it is approximated that the sequence contain up to 8 percent of the genome. There are some types of non-coding DNA which are genetic and cannot encode proteins but they can regulate when the genes are expressed. 8 percent of the genome is also made up of repetitive DNA sequences, the sequences varies greatly even among people who are closely related.

The human genome varies depending on the sequence of DNA from one human being to another; people are unique since their genomes are unique. People who are closely related have their genome more similar. The difference between two people genomes is about 3 million. The difference in genome is small and simple, it revolves around few bases such as an A being substituted with a T or a G left out somewhere.

In conclusion, every human being genome is different from one another because of mutation that takes place in DNA sequence. The genome variations are found throughout the cell in every one of the 47 chromosomes and this variation is distributed uniformly. The variation includes mutation and polymorphism. The human genome called haploid contain up to 3 billion DNA base pairs while another genome called diploid contain double the DNA content. The three billion components are referred to as nucleotides and are structured into DNA molecules.

References

International Human Genome Sequencing Consortium (2004). Finishing the euchromatic

sequence of the human genome. Nature. Vol. 431 (7011): 931–45

Kauffman, S (1969). Metabolic stability and epigenesis in randomly constructed genetic nets.

Journal of Theoretical Biology. Vol. 22 (3): 437–467.