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Doubling Nature of Nucleic Acid

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Abstract

The survival of any cells depends on the metabolic activities carrying place in the cell which involves the proteins and enzymes for the process to occur. These proteins are encoded by the DNA which are said to be responsible for the carrying of the genetic information of the cell. Thus, the maintenance of these DNA is ensured by the DNA replication.

Keywords: Eukaryotic cells • DNA replication • Mutations

Introduction

The DNA replication leads to the formation of the replicative DNA which takes place in the nucleus of the cell. If this process doesn't take place it would lead to the defective daughter cell which would be lacking in the essentials protein leading to the serious genetic complications. One of the major roles of the DNA replication is that it is responsible for the maintenance of the autosomal cell's diploid status.

As DNA transfers the genetic material from the parent to their offspring, it undergoes many genetical level changes which can be the result of mutations during the DNA replication. The mutations occurred can be advantageous or disadvantageous to the living cell. Thus, the DNA replication needs to be performed by the living cells in a very considered manner. Thus, mutations are also very helpful in giving the genetical proof of the evolution of life.

When the replication is taking place it has been observed that the new replica formed by the DNA template consists of the minor level of mutations which provides the uniqueness of that particular DNA strand, thus bringing the effect of the unique traits acquired by a protein encoded by that gene or the replica strand. The replication of DNA can follow three types of pathway for its process to occur, which are dispersive, conservative and semi-conservative, but the semi-conservative type is mostly favored.

The semi-conservative path followed by the DNA replication in which the DNA Strand gets denatured and leads to the two half DNA strand that in further stage acts as the template DNA for the new replica strand to be formed by the process of DNA replication. The replication of the complementary strand takes place by the free nucleotides that present in the nucleoplasm, which leads to the development of the new strands by the base pairing rules that needs to be followed by the cell in a very well organized manner and thus, making the cell to function in a proper way.

The DNA replication in Eukaryotic cells occurs in the phases of the DNA synthesis, thus, the replication of DNA occurs in the S-phase of the DNA synthesis. The replication are made to occur by the trigger of the checkpoints that are responsible for cascading the signal if any of the unrequired changes occurs within the process of DNA replication and after the dissolution of the unrequired changes the replication process resumes it process.

Conclusion

The DNA replication is said to be very sensitive process as it includes the denaturation and renaturation of the DNA molecules which increases the rate of mutation occurrence at very high possibility. The replication process lead to some of the broken chromosomes that results in the change of genetic makeup of the DNA. Thus, these changes can lead to the tumor growth in the body resulting in the cancer. However, our body consists of the defense mechanism which shields us from these mutations.

Conflict of Interest

We have no conflict of interests to disclose and the manuscript has been read and approved by all named authors.

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