DNA Genetic Recombination

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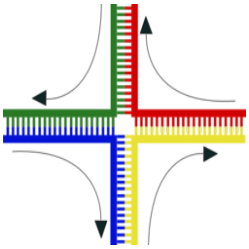
What is DNA Recombination?

Definition: 

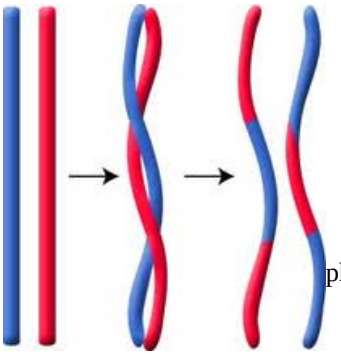
Genetic Recombination is the process of forming newalleliccombination inoffspring by exchanges betweengenetic materials.

Or

we can simply say it is a process by which a molecule ofnucleic acid is broken and then joined to a different one

Crossing Over & Recombination

The DNA double helix won't interact with the rest of its segments. Human beings have chromosomes in a specific area in their cells and these areas are known as chromosome territories. It is present in the nucleus of the cell. As they are



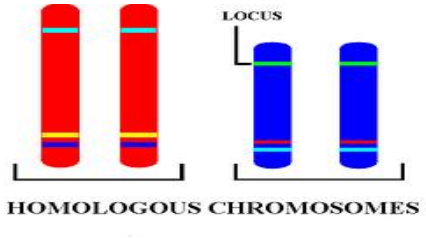
physically different from the rest of the parts of cell, it is a unique specialty of DNA and helps the DNA function as a stable repository for information. Some times duringrecombination the chromosomes interact with each other and the process you know is thechromosomal crossover. Two helices of DNA break and a particular section of a helix will rejoin with the other helix. This is known as crossover of DNA.

Because of the recombination, chromosomes exchange their genetic information with the other helix and new combinations would be arises. This new combination of genes increases the chance ofnatural selection. This will be very important for the evolutionary process of the biology.This recombination would create new proteins too. This genetic recombination has its main role in the DNA repairing. This has the influence in the cell response to the double helix breaks.

Types of Recombination

1.Homologous Recombination

2.Non Homologous Recombination



Homologous recombination is the common form of chromosomal crossing over. Homologous means the two chromosomes which undergoes the process of

cross over share very similar sequences.

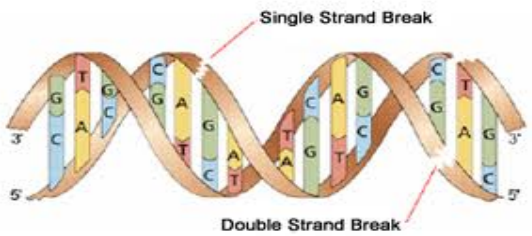
The Non-homologous recombination can occur between DNA sequences that contain no sequencehomology may damage the cells and result with many genetic abnormalities and the translocation of chromosomal.

Catalyzing Enzymes

The genetic recombination reaction is catalyzed by

- Recombinases - RecA- is responsible for the repair of DNA double strand breaks
- RAD51 protein is required for mitotic and meiotic recombination
- DMC1 protein is specific to meiotic recombination.

Role of Enzyme:



Recombinases are the enzymes which catalyses the recombination reactions. This recombinase break the DNA double helix for DNA genetic recombination or any damage to DNA may also a reason for the DNA breakage

After the double helix break, the enzyme recombinase leads to the join of the two helices. While joining with the other helix, it should match to the complementary strand of the other helix. Then only the recombination would occur.

Want to know more about genetic recombination process?Click here to schedule live online session with e Tutor!

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Reference Links:

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