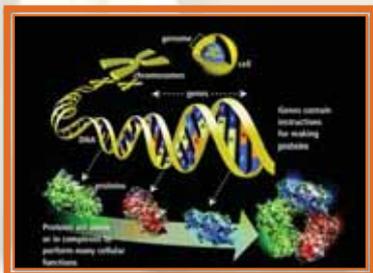


EVOLUTION OF GENES AND GENOMES

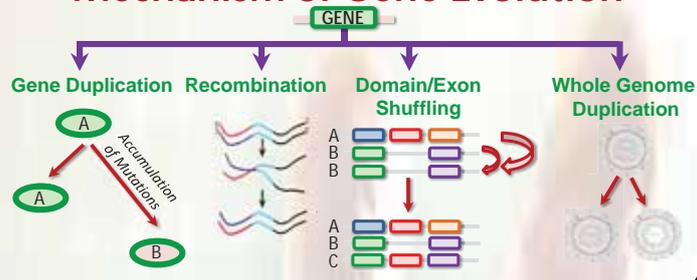
Evolution of species of all life forms is the manifestation of the **Evolution of their Genes and Genomes**

Genes and Genomes

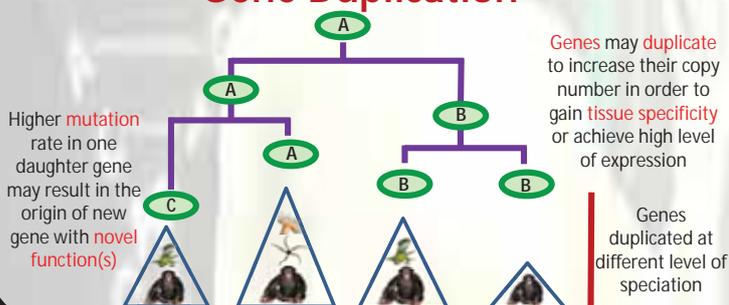
Genes, being a **heredity unit**, encode protein and RNAs that consequently establish the **phenotype** of an **organism**.
Collection of genes in an organism is called as **genome**.
The organisms evolved as a result of random variations followed by natural selection in their genes and genomes



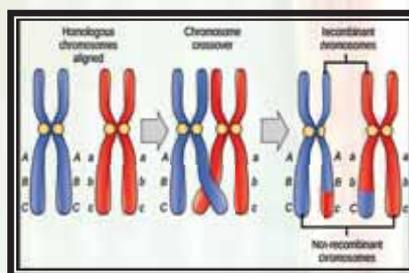
Mechanism of Gene Evolution



Gene Duplication

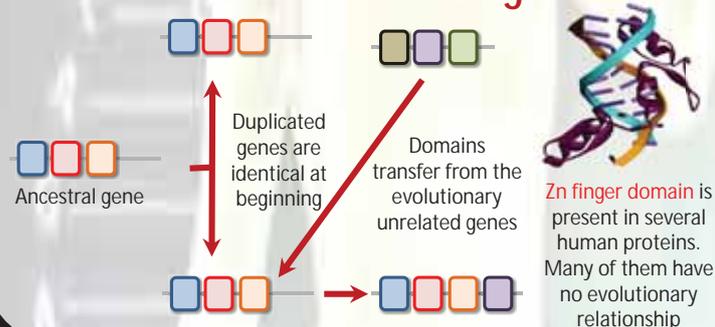


Recombination

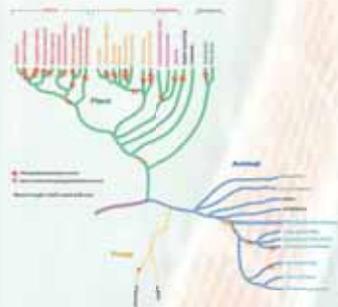


Gene recombination is another mechanism by which organism produces genetic variations in the progeny. Briefly, different combinations of gene variations is generated by **exchanging parts of chromosomes**

Domain Shuffling



Whole Genome Duplication



Evolutionary history of life is full of surprises, of these **Whole Genome Duplication** events are among the most profound. These events resulted in the extensive expansion of gene families which in turn brought structural and/or functional novelties

Gene Birth and Death

