Some other types of Gene Mutations are

(A) Missense Mutations
(B) Nonsense Mutations
(C) Silent Mutations
(D) Sense Mutations.

(A) Missense Mutations :- They result in replacement of one ~~amino acid in~~ amino acid in a polypeptide chain by another. Here one base of a codon may be substituted by another. It is caused by substitution, deletion or insertion. e.g. UUU code phenylalenine. Substitution in a single base U → G cause UGU the codon for Cysteine.

(B) Nonsense Mutations :- ~~Any~~ These are the mutations which cause alteration of a codon specifying amino acid to a termination codon is called a nonsense mutation e.g. UAC codes Tyrosine; one base substitution (C → G) it becomes UAG a termination codon.

(C) Silent Mutation :- These genetic mutations do not result in phenotypic expression. It is of different types
i) Degenerate → There are more than one codes which codes the same amino acid. e.g. AAG and AAA codes Lysine.
ii) The change may not be sufficient to modify the function of protein appreciably.
iii) The mutation may occur in a non-functional gene.
iv) Simultaneous presence of suppressor mutations cause a mutation to be supressed.

(D) Sense Mutation :- Mutation in a termination codon may convert into a sense codon for some amino acid e.g. UAA termination codon to (U → C) CAA codon for Glutamine.

(F) On the basis of chromosomes the ch mutations may be
i) Autosomals → Mutations take place in ch autosomes. This show phenotypic change in vegetative structures.
(ii) Allosomal or Sex-chromosomal → Mutations takes place in sex-chromosome affecting sexual characters.

(E) on the basis of magnitude the mutations may be :→
(i) Dominant → These mutations ~~domin~~ are dominant and show their appearance even in heterozygous conditions They bud a seperate line.
ii) Recessive → These mutations are recessive and cannot appear except the homozygous condition. Their appearance is less and ~~las~~ affect the organism and population.

(D) Direction → According to the direction the mutation may be
(i) Forward → If it leads towards evolution. It may be an advance~~ment~~ character.
(ii) Backward → It may be reversal of the mutated ones. i.e. mutated character is lessed and wild or previous ones will appear.

(C) Origin :- On the basis of origin the mutations may be.
(i) Natural :- They occur at natural conditions. It may be due mutagens present in nature as cosmic radiations, radioactive substances, heat, base ~~as~~ analogues as caffein or due to tautomers.
It may arise due to ambiguity of base pairing during replication because of Wobble.
(ii) Induced :- These are ~~due to~~ induced artificial mutations. They are not natural. The substances causing them are known as Mutagens. There may be of different kinds.

(B) Type of cell:- According to this mutations may be
(i) Somatic → Those mutations which takes place in vegetative or body cells. It may take place in embryonic as well as adult conditions. It leads to several diseases including the fatal ones e.g. Malignancy, Heterochromia, etc. It is not genetic,

(ii) Gametic → Generative → It may occurs in gametic cells, these are heritable and of great genetical significance, providing raw materials of Natural selection.

(A) Stages:- According to stages at which mutation may take place it is of following types.
(i) Pregametic → It occurs prior to formation of gamete affecting a number of gametes and so a large number of individuals in which these gametes are involved.
(ii) Gametic or Zygotic → It takes place in a single gamete or zygote affecting a single individual which carry the mutation.
(iii) Post zygotic → It takes place after the development of zygote, Only a part of the organism is affected.