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Mutations and Genetic code

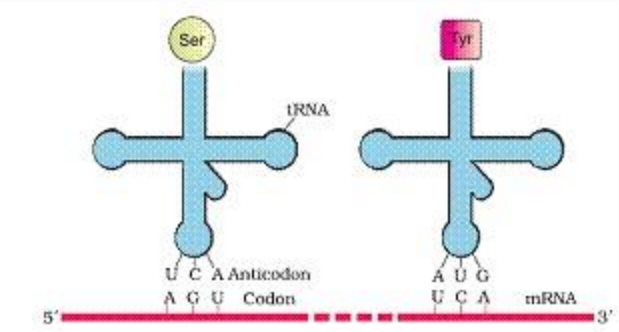
A change of single base pair (point mutation) in the 6th position of Beta globin chain of Haemoglobin results due to the change of amino acid residue glutamate to valine. These results into diseased condition called sickle cell anaemia.

Insertion and deletion of three or its multiple bases insert or delete one or multiple codons hence one or more amino acids and reading frame remain unaltered from that point onwards. Such mutations are called frame-shift insertion or deletion mutations.

tRNA– the Adapter Molecule

The t-RNA called as adaptor molecules. It has an anticodon loop that has bases complementary to code present on mRNA and also has an amino acid acceptor to which amino acid binds. t-RNA is specific for each amino acids.

The secondary structure of t-RNA is depicted as clover-leaf. In actual structure, the t-RNA is a compact molecule which look like inverted L.



Translation process: Translation is the process of polymerisation of amino acids to form a polypeptide. The order and sequence of amino acids are defined by the sequence of bases in the mRNA. Amino acids are joined by peptide bonds. It involved following steps-

a) Charging of t-RNA.

b) Formation of peptide bonds between two charged tRNA.

• The start codon is AUG. An mRNA has some additional sequence that are not translated called untranslated region (UTR).

• For initiation ribosome binds to mRNA at the start codon. Ribosomes moves from codon to codon along mRNA for elongation of protein chain. At the end release factors binds to the stop codon, terminating the translation and release of polypeptide form ribosome.