

[illegible]

The following are examples of mutations that can occur in DNA:

- Point mutations:
 - Substitution: One base is replaced by another.
 - Silent mutation: The change does not affect the amino acid sequence.
 - Missense mutation: The change results in a different amino acid.
 - Nonsense mutation: The change results in a premature stop codon.
 - Deletion: One or more bases are removed.
 - Frameshift mutation: The deletion shifts the reading frame, changing all subsequent amino acids.
 - Insertion: One or more bases are added.
 - Frameshift mutation: The insertion shifts the reading frame, changing all subsequent amino acids.
- Indels: Insertions and deletions.
 - Indel mutations can cause frameshifts, which can lead to premature stop codons or completely different amino acid sequences.
- Large-scale mutations:
 - Chromosomal mutations: Large-scale changes in the structure or number of chromosomes.
 - Deletion: A large segment of a chromosome is missing.
 - Duplication: A large segment of a chromosome is repeated.
 - Inversion: A segment of a chromosome is reversed.
 - Translocation: A segment of one chromosome moves to a non-homologous chromosome.

Mutations can have various effects on an organism, ranging from no effect to severe disease or death.

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