Deletion

Deletion (also called gene deletion, deficiency, or deletion mutation) (sign: Δ) is a mutation (a genetic aberration) in which a part of a chromosome or a sequence of DNA is lost during DNA replication. Any number of nucleotides can be deleted, from a single base to an entire piece of chromosome.

The smallest single base deletion mutations are believed to occur by a single base flipping in the template DNA, followed by template DNA strand slippage, within the DNA polymerase active site.

Deletions can be caused by errors in chromosomal crossover during meiosis, which causes several serious genetic diseases. Deletions that do not occur in multiples of three bases can cause a frameshift by changing the 3-nucleotide protein reading frame of the genetic sequence.

Complete deletion of both the short arm of chromosome 1 (1p) and the long arm of chromosome 19 (19q) is pathognomonic for oligodendroglioma [1) 2)] It is strongly associated with IDH mutation and is mutually exclusive of ATRX & TP53 mutations.

1)
Louis DN, Perry A, Reifenberger G, et al. The 2016 World Health Organization Classification of Tumors of the Central Nervous System: a sum- mary. Acta Neuropathol. 2016; 131:803–820
2)
Stupp R, Brada M, van den Bent MJ, et al. High- grade glioma: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. Ann Oncol. 2014; 25 Suppl 3:iii93–ii101