

Germ Cell and Somatic Cell Chromosome Mutations

What are Germ Cells?

1. the cells in the body that transmit genetic information into the next generation;
2. any of the embryonic cells that have the potential to develop into spermatozoa or ova;
3. any of the cells undergoing gametogenesis including gametes themselves.

The germ line, is the line from which gametes are derived. On the other hand a somatic cell any cell that is not derived from germ line cells.

What is a Mutation?

A mutation is any permanent change in DNA, i.e. a change in the nucleotide sequence or arrangement of DNA in the genome. Mutations can be caused by chemicals that have mutagenic potential, viruses that have the ability to integrate into host DNA and ultimately cause errors in the original sequence, radiation as well as errors that occur during meiosis or DNA replication. Mutations can be classified as:

1. genome mutations that affect the number of chromosomes in a cell due to problems of cell division;
2. chromosome mutations that alter the structure of individual chromosomes, for example insertions, deletions, translocations;
3. gene mutations that include alterations of individual genes for example point mutations (missense, nonsense and silent) and frameshift mutations.

Germline VS. Somatic Mutations

In multicellular organisms, mutations can be subdivided into germline mutations and somatic mutations. Germline mutations are hereditary and can be passed to the progeny while somatic mutations are not hereditary. A germline mutation is any detectable, heritable variation in the lineage of germ cells. In animals, mutations are more likely to occur in sperm than in ova, because a larger number of cell divisions are involved in the production of sperm.

Germline Mutations	Somatic Mutations
Affect gametes	Affect somatic i.e. non sex cells
Mutation on genetic information can be transmitted to the next generation	Effects are felt only by the organism carrying the mutation, i.e. cannot be transmitted

Links

Related articles

- Genotype Variation, Mutations and Recombination

Bibliography

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