

Lethal alleles: Certain genes are absolutely essential for survival. The alleles created by mutations in these genes are called lethal alleles. The phenotypic manifestation of these alleles is the death of the organism. Lethal alleles may be recessive or dominant. Recessive lethal alleles are lethal when present in homozygous condition whereas dominant lethal alleles show lethal effects even in heterozygous conditions.

Dominant lethal alleles are very rare. Lethal alleles fall into four categories -  
(i) Early onset: Lethal alleles which result in early death of an organism during embryogenesis.

(ii) Late onset: Lethal genes which have delayed effect so that the organism can live for sometime but eventually succumb to the disease.

(iii) Conditional onset: Lethal alleles which kill organism under certain environmental conditions only. For e.g.: A temperature sensitive lethal allele may kill organism at high temperature but not at low temperature.

(iv) Semi-lethal: Lethal alleles which kill only some individuals in the population but not all.