Diploid Encyclopedia Article

Diploid

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Diploid

The diploid chromosome complement of a species, designated 2n, consists of the combined haploid chromosome sets, each designated 1n, contributed by the male and female parents at fertilization. The diploid complement of chromosomes consists of pairs of each chromosome. The haploid gamete (sex) cells have only one member of each chromosome pair. In most frogs of the genus *Rana*, the diploid number is 26 and the haploid number is 13. In humans, the diploid chromosome number is 46 and the haploid number is thus 23. Most body cells, also known as somatic cells, are diploid.

The diploid number of body cells is maintained by mitosis which is nuclear division. Mitosis gives rise to two identical sets of chromosomes which are distributed to daughter cells at cell division. Diploid cells have a precise amount of DNA which is characteristic of the species. Meiosis is the process by which diploid germ cells give rise to haploid cells of the mature sperm and mature eggs. Haploid cells contain precisely half the quantity of DNA as that of diploid cells. Fertilization of the egg with a sperm restores the diploid chromosome complement and the diploid amount of DNA in the zygote. Subsequent embryonic and adult cells are diploid and are derived by mitosis from the zygote.

There are exceptions to the general rule that body cells are diploid. One exception are cells of the regenerating liver which may contain exactly twice the diploid amount of DNA. Cancer cells are another exception. Cancer cells commonly have an irregular complement of chromosomes which is known as aneuploidy. Cancer cells may have a diploid number of chromosomes but one or more chromosomes may be structurally abnormal.