

Heredity

Heredity is defined as the passing of characteristics from parent to offspring. The DNA of the parents is given to the offspring through the sperm and egg cells that fuse to make the first cell of the offspring. A **child** inherits half of the characteristics from the father and half from the mother. Thus, their overall characteristics and appearance can be similar to the parents or different from the parents. Sometimes the combination of alleles from the parents can be recessive. In this case, recessive characteristics that were not expressed in either parent can be expressed in a child. The process of inheriting genetic information results in a lot of variation in offspring, and overall in the population. This is important, because some phenotypes are more favorable than others in natural selection. Phenotypes that give individuals an advantage in survival or mating allow it to live longer and reproduce more, resulting in that phenotype increasing in frequency in the population.



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Passing characteristics from parent to offspring

Parents Passing Hair Color to Children

Each parent passes on their genetic information to each child. Children can inherit traits or characteristics from their parents.

Those characteristics can be similar to or different from parents

Children with Similar and Different Hair Color

Because characteristics are inherited from both parents, children can have characteristics that are either similar to or different from either or both parents.

Half of the genes come from the father

Half of Hair Color coming from Father's Gene-Genie

Half of the genes of each person come from the father.

Half of the genes come from mother

Half of Hair Color coming from Mother's Gene-Genie

The other half of each person's genes come from the mother. The combination of mother's and father's genes creates genetic variation.

Recessive characteristics not expressed in either parent can be expressed in a child

Hair color not expressed in parents expressed in their Red Hair Child

If each parent is heterozygous and carries the recessive allele, some of the children may inherit both recessive alleles (one from each parent). In this case, a child can express a recessive phenotype not expressed in either parent.

Some phenotypes are more favorable than others in Natural Selection

Red Hair camouflaging with environment and Monsters hunting the exposed Brown Hair family

Variation in phenotypes is important in natural selection. Some phenotypes are more advantageous than others, leading to increased survival rates or reproduction rates. For example, a phenotype that allows individuals to camouflage better may allow for better survival.