

Genetic drift



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Genetic Drift There are two types of genetic drift, the bottleneck effect and the founder effect. Genetic drift is a term that refers to changes in allele frequencies. These changes happen by chance and cannot be predicted. Let's look at both types of genetic drift. The first genetic drift type we will look at is the bottleneck effect. Genetic drift can affect real world organisms through a mechanism called a population bottleneck. This is when a large population is slashed and then recovers from a few survivors.

The reduced genetic diversity based on the few surviving original alleles is what they call the bottleneck effect. An example of the bottleneck effect is the cheetah. Until about 10, 000 years ago, they had a large population in all of Africa, the middle east, and stretching into Asia. However, the population apparently crashed due to disease, drought, or overhunting by humans. This left only a few thousand. Cheetah population has rebounded since then, but genetic diversity remains low. Since all living cheetahs derive from the same few survivors, this is the bottleneck effect.

The next genetic drift type is the founder effect. The founder effect stems from the long term isolation of a population founded by a few individuals. This is when a few individuals split off from a large population and founded by a new isolated population. Both populations continue to exist because the small group bears such a small fraction of the larger population's alleles. The small population size means that the colony may have reduced genetic variation from the original population.

For example, the Afrikaner population of Dutch settlers in South Africa is descended mainly from a few colonists. The Afrikaner population has an

unusually high frequency of the gene that causes Huntington's disease, because those original Dutch colonists just happened to carry that gene with the unusually high frequency. The genetic drift plays a significant role in genetics. The bottleneck and founder effects are still happening today. These two types of genetic drift are very different but ultimately have the same outcome.