

Genes and Experience Make the Person

Think of genes and experience working together to make a person unique. The human genome consists of 30,000 genes which turn on and off to activate and encode proteins. An example of this is the Hox genes, which turn on and off in response to promoters to dictate how long the neck and body are on different species. We inherit genes which can turn on to the stimulus of an experience, and conversely, we also preferentially pass on genes that predispose us to different responses. These responses are unique to us and our progeny, but are still activated by the environment.



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Genome

Jean-home

The genome explains what makes us unique. There are roughly 30,000 genes that encode humans, and these encode our biological make up. Genes interact with the environment to make us who we are.

Genes turn on and off to produce proteins

Jean Turns On to Produce Protein-powder

A new understanding of how genes work describes that learning is dictated by genes turning on and off. These genes are expressed and modified by experience to encode various proteins that make up the cells in our bodies.

Hox genes help layout the body

Hawk Jeans Forming the Body

Hox genes, like all genes, are switched on and off in different parts of the body at different times. In this way, genes can have subtly different effect, depending on where and how they're switched on. In this process, or the switches are known as promoters, and can have profound effects on the length of animal necks and body sizes. Think of this: promoter sequences of the hox gene determines the difference between the neck size of a giraffe and a frog.

Genes leave us open to be affected by experiences

Jeans Turned On to Experience

Experiences effect our genes switching on and off, and our genes are designed to take cues from everything that happens to us. For example, if a child is not exposed to a lot of spoken language during the critical learning period, he or she will always struggle with speech. Thus, it can be concluded that the genes for language exist, but the experience of spoken word activates those genes.

Experiences affect our genes

Experiences Affecting Jeans

Experiences effect our genes switching on and off, and our genes are designed to take cues from everything that happens to us. For example, monkeys are afraid of snakes, but not flowers. They develop this fear from watching other monkeys run away from snakes, but it is difficult to teach a monkey to be afraid of flowers. Thus, monkeys don't inherit a fear of snakes, but have a predisposition to learn the fear of snakes.