

GENES ARE NOT OUR DESTINY

Since the discovery of DNA by Watson and Crick, there has been the presumption that we are merely an expression of our genes. With this belief, we mapped the human genome in record time with hopes of identifying disease-causing genes and developing drug therapies to treat them. The expectation was that humans would have more than 100,000 genes based on the number of genes found in simple creatures like mice and fruit flies. The number turned to be only around 23,000 and while the project has not yielded the expected profits, it was the beginning of our journey to understand us at the molecular level. Soon another discovery would turn the genetics world on its head.

Agouti mice were genetically bred to be obese. The adults were always fat and yellow in color, generation after generation and their babies were the same. In a 2003 experiment conducted at Duke University, scientists gave a pregnant Agouti mouse three simple B-vitamins and she gave birth to slim brown babies. The vitamins [B-12, B6, and folic acid (B9)] had turned off the obesity genes and kept them from expressing themselves. This was evidence of a phenomenon coined in the 1940s called **epigenetics** (meaning above the genes). It proved that our genes are not our destiny; our environment is capable of muzzling a gene preventing it from being expressed.

Think of genes as a piano keyboard. The environment --the air we breathe, water we drink, food we eat, toxins to which we are exposed, and most significantly our thoughts and emotions-- are all constantly playing our piano keys and we are the music. We can be the music of Mozart, Ray Charles, Jerry Lee Lewis, etc. Since we all have unique genomes with unique interactions with our environment, none of the more than 7 billion people on earth will be exactly the same. Even identical twins with the same genes will have unique interactions with their environments and therefore unique gene expressions. We are all one-of-a-kind!

Since our feelings are the most powerful influence on our genes a new way of thinking about them is necessary. The genes are not the *brains* of the cell, rather the *gonad*. They are merely answering to the requests of the environment. They are not in control, you are. So, what is the really amazing about our genome? It is the way it answers to the environmental requests; it says: **Your Wish is My Command!**