

## Genetics and Longevity - Can Your Lifestyle Choices Impact Your Genes???

Did you ever think you would read an article which told you that your genes could be influenced by the lifestyle choices that you make???

Well, this article will explain what research has demonstrated - that some genes can be influenced, and that can provide you with a powerful piece of mind if a chronic, degenerative disease "runs in your family". You can make the choice to adopt a lifestyle that can decrease your chances of being diagnosed and if you've already been diagnosed, can help to prepare you for a better battle against the disease.

Inherited traits are passed from one generation to another by way of genes. Some genes act as dictators such as those that determine eye color, hair color, or blood type. Other genes act as advisors. They make suggestions. An example of this kind of gene may be a person's resistance to diseases. In this case, a person's environment, their lifestyle, helps to determine if the gene is expressed. Per T. Colin Campbell, PhD, Jacob Gould Schurman Professor Emeritus of Nutritional Biochemistry at Cornell University, "Genes do not determine disease on their own. Genes function only by being activated, or expressed, and nutrition plays a critical role in determining which genes, good or bad, are expressed." Matthew Lederman, MD puts it this way, "Genetics loads the gun, but environment pulls the trigger." Neal Barnard, MD explains that "Genes are not the only thing we pass down from generation to generation. We also pass down recipes."

For example, a major review on diet's impact on cancer, prepared for the U.S. Congress in 1981, estimated that genetics only determines about 2-3% of total cancer risk. This may be explained by a gene's penetrance, how strongly the gene can influence the actual development of the disease. Few genetic abnormalities have a penetrance close to 100%. The genes responsible for cystic fibrosis and Huntington's disease are two exceptions. Most of the time, it is a combination of genes, environment, and chance.

Even the most powerful breast cancer-associated genes, BRCA1 and BRCA2, have an estimated penetrance between 30-70%, and that is the chance of developing the disease by age 70, not dying from it. Estimates such as these tend to come from women who have both genes and a strong family history, which may mean the actual gene penetrance is even lower for women without family histories. That doesn't mean that if you don't fall into this category that you won't get breast cancer. It just means that your genetic penetrance is likely closer to that of the average person, 10%. Risk factors and chance play a much larger role.

Another study found that a low-fat, plant-based lifestyle changed gene expression in over 500 genes in just three months, "turning on" genes that protect against disease and "turning off" genes that promote breast cancer, prostate cancer, inflammation, and oxidative stress.

A variety of fruits and vegetables provides a wealth of different antioxidants which not only prevent DNA damage by free radicals, but also modulate gene expression which can enable damaged cells to recover instead of being irreparably lost.

Advances in research have produced very interesting implications on telomeres and longevity. There are caps on the ends of our chromosomes, similar to the plastic tips on shoelaces. These caps, called telomeres, protect the ends of the chromosomes and keep them from unraveling and fraying.

They also protect our DNA. Each time our cells replicate, our telomeres shorten just a bit. As we age, the telomeres become progressively shorter and shorter until such time when there is no telomere left, in which case, the cell either fails to reproduce or dies. Smoking has the most detrimental effect on our telomeres followed by processed meats and non-fried fish.

Dr. Elizabeth Blackburn, Carol Greider, and Jack Szostak shared the Nobel Prize in 2009 for discovering telomerase, an enzyme found to repair and rebuild our telomeres. Studies indicate that following a plant-based lifestyle and exercising boosts telomerase within our bodies in as little as three months.

Researchers have made some phenomenal advances in the study of genetics and the impact our choices can have. Maybe our destiny is not as inevitable as we once thought and we have the power to influence our genes by the lifestyle choices that we make.

*I am a Plant-Based Nutrition Counselor, a graduate of Cornell University's plant-based nutrition program, the **only collegiate program in the country** which focuses on the medical benefits of a low-fat, plant-based lifestyle, and am board certified by the American Association of Drugless Practitioners. I help people to achieve their wellness goals by providing them with the tools that they need to gain control over their health. If you would prefer individualized assistance with your weight, with a chronic, degenerative disease, with other health and wellness aspirations, or if you would like me to speak to a group, please email me at [traceyeakin@gmail.com](mailto:traceyeakin@gmail.com) or give me a call at 724.469.0693 to arrange a time. Please visit my web site at [www.traceyeakin.com](http://www.traceyeakin.com).*

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