Change Your Life Change Your Genes

(The Epigenetic Benefits of a Hygienic Lifestyle)

Dr Frank Sabatino

Genes are the functional units of heredity comprised of spiralling sequences of DNA. According to the Human Genome Project, there are 20-25,000 genes contained in the chromosomes of every cell in the human body.

Genes provide the blueprint that transcribes all the proteins that are necessary for the function of all body cells and systems as well as all of the traits of our physical and psychological identity.

Unfortunately, many people sell themselves short by feeling completely defined, limited and even imprisoned by the deck of genetic cards they were dealt at birth. So that you often hear people exclaim that because their parents or grandparents had diabetes, or heart disease or some form of cancer etc. they would likely develop the same problems.

Even worse is when people discover that they have some genetic construct, like BRCA genes in women that may predispose them to the development of breast cancer, that makes them feel like they have no choice but to opt for some medical intervention that can compromise their health or be coerced to surrender their vital body parts to surgical mutilation for fear of what "may" happen.

It is so important to realize that you do not have to feel handicapped by your trans-generational genetic hand me downs.

> *"Routine, healthy lifestyle choices, especially plant based nutrition, stress management techniques and physical activity can dramatically alter how genes function."*

Burgeoning research in the study of epigenetic effects strongly suggests that outside environmental factors and lifestyle choices can modify gene expression without changing the hard wired inherited sequence of DNA nucleotides that make up your genes.

This provides a remarkable opportunity for hopeful positive change and is an exquisite example of how modern scientific observation of the integral sublime function of the body connects with and reinforces the profound ancient wisdom of Natural Hygiene.

Routine, healthy lifestyle choices, especially plant based nutrition, stress management techniques and physical activity can dramatically alter how genes function and may reduce the deterioration and morbidity from heart disease, cancer, immune disorders, and depression while even slowing down the aging process.

Conversely, risky lifestyle choices can ultimately promote similar disease and breakdown in different people regardless of their genetic backgrounds.

An example of this is the growing pandemics of obesity, heart disease, colon and reproductive cancers in Japan, China and other parts of Asia that did not exist when the Asian populations were eating more of their ancestral plant based diets.

However as they continue to saturate their diets with more animal protein, saturated fat, dairy products and refined sugar similar to people in the US and other western nations, they continue to develop the same devastating chronic diseases as these western nations regardless of their obvious genetic differences from non-Asians living in the West.

Ornish and his colleagues showed significant changes in prostate gene expression from cancerous prostate biopsies of men that were subjected to extensive nutrition and lifestyle intervention.(1)

Men with low risk prostate cancer who declined surgery, hormonal therapy or radiation underwent lifestyle modifications including : low fat (less than 10% fat) whole food plant-based nutrition, yoga and progressive relaxation stress management techniques, moderate exercise (walking 30 min 6x/ week), and participation in a psychosocial support group.

After 3 months of lifestyle modification, prostate cancer biopsies suggested that 453 genes promoting tumor growth were suppressed. A one year follow up showed that the men who maintained the lifestyle modification had a significant decrease in Prostate Specific Antigen (PSA), a protein marker that is increased by prostate cancer, and cancer growth that was 8x less than the cancer growth in the unmodified control group. In addition, people with heart disease following the Ornish diet also experienced significant weight loss and drops in blood pressure. These healthy changes were accompanied at 12 weeks by a significant reduction in the activity of 23 genes, and, after a year, 143 genes that typically promote inflammation and blood vessel injury.

"Significant positive changes in prostate gene expression were seen in men that were subjected to extensive nutrition and lifestyle intervention"

Stress management techniques and exercise promote well established epigenetic effects on genes associated with disease and aging. There are repeating units of DNA (telomeres) at the ends of chromosomes that protect and stabilize chromosomes and genes during the process of cell division and growth. These telomeres are like the hard cap at the end of shoe laces that protect the shoe lace from fraying and falling apart. However, these telomere caps shorten and are worn away by the cumulative effects of cell division as a cell ages and moves toward death. The enzyme telomerase is the catalyst for the lengthening of telomeres when DNA is replicated during the growth and repair of cells. So that the shortening of telomeres and a reduction in telomerase are associated with and are markers for aging.

Chronic stress promotes shortening of telomeres and a decrease in the activity of the enzyme telomerase. (2) Telomere length and telomerase activity were measured in white blood cells of mothers taking care of chronically ill children compared to mothers of healthy children.

The longer a woman spent caregiving a sick child the more stressed she was and the

shorter were her telomeres. In the most stressed out women, their telomere shortening and decreased telomerase activity suggested that they had aged at least ten years more than the least stressed women of similar biological age.

It is important to realize that stress also decreases effective immune function.

When you are confronted by events that you perceive as debilitating, and perhaps even life threatening, the body activates a fight or flight response and directs its attention, oxygen and blood flow away from the immune system and toward the muscles that can help it fight or run way from the perceived threat.

In a sense, the immune system is suppressed as the body is more concerned with short term survival rather than long term protection. However, as stress becomes more constant and chronic this can lead to a more threatening decrease in immune protection.

Caregivers of sick and dying loved ones are a classic example of people under chronic stress that have compromised immune function. They typically have slower wound healing and are more prone to bacterial and viral infection.

> *"Even short periods of routine meditation and stress management activity can dramatically reduce the impact of stress,."*

Caregivers of Alzheimer's patients showed a decline in immune function and accelerated shortening of telomeres and accelerated aging. (3)

The good news is that the practice of even short periods of routine meditation and stress management activity can dramatically reduce the impact of stress, improve mental health, and reduce the genetic aging process.

Caregivers of dementia patients suffering with symptoms of depression had significant increases in telomerase activity following just 12 minutes of daily meditation for 8 weeks. (4) This increase in telomerase activity was accompanied by improvement of mental and cognitive function as well as a decrease in the symptoms of depression.

It is important to note that there are also chemical reactions in the body that can occur at specific sites on the DNA sequence of genes and modify protein production in both health and disease.

In one of these important reactions (methylation) a carbon centered methyl group is attached to building blocks of DNA (nucleotides) on the gene sequence and plays a major role in the differentiation of cells. It has also been suggested that the methylation of genes in brain cells regulates the production of transporter proteins that promote the re-uptake of

neurotransmitters from the synapse between nerve cells.

The clinical use of nutrient factors, including the supplementation of SAM-e and folate, have been used to balance methylation, enhance transporter protein production in the brain, promote healthy balanced re-uptake of neurotransmitters and provide a natural healthy alternative treatment for depression. (5)

Methylation also occurs at certain sites on tumor promoter and suppressor genes that can increase or decrease the development and growth of cancer. Physical exercise has been shown to decrease and even reverse promoter methylation and decrease the risk and development of breast cancer. (6)

Women that participated in 129 minutes of exercise a week for 6 months, compared to a control group doing just 21 minutes per week, had 43 genes that showed significant changes in methylation.

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Three of these genes were directly correlated with an increased survival from breast cancer. (7) Patients that exercised longer had lower methylation levels, and a greater expression of tumor suppressor genes, resulting in more than a 60% reduction in the risk of breast cancer death compared to the limited exercise group.

Exercise also affects gene expression with respect to metabolism. These effects can affect and improve muscle growth and stamina. (8)

Exercise has also been shown to promote the genetic production of chemicals that stabilize telomeres and slow down the aging process. Therefore, people that exercise more consistently are more likely to decrease the shortening of their telomeres and have telomeres that are less ravaged by time and aging compared to people that are more sedentary. (9)

Your genetic blueprint can predispose you to any number of positive and negative conditions

and changes. But what you choose to do, and the environment that you create on a routine basis in your life, goes a long way to determining how your genetic background expresses itself and whether any of your negative predispositions become concrete outcomes.

You must know that you don't have to drown in your gene pool. It is so important to realize and embrace the power of personal choice. It is so important to free yourself from the genetic constraints and fears that may dominate your concerns and realize that your genetic foundation is a shimmering tapestry capable of profound modification and change.

Simple constructive lifestyle choices of plant-based nutrition, consistent exercise, and activities that promote psychological poise dramatically promote healthy gene expression and reduce the devastating causes and effects of disease and aging.

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