

Epigenetics: How You Affect Your Own Health

Your DNA is not your destiny. Your genes, themselves, do not create the "stuff" of our lives including aspects of our health or our diseases. Please go to Amazon.Com and search for the book [The Genie in Your Genes](#) by Dawson Church, PhD. I invite you to read the book's description. It is remarkable research and a remarkable book. If you can, please read it or at least skim it. Research over the last decade or more has revealed convincingly that signals sent to our cells affect signals that are delivered from the cell membrane to the nucleus of our cells. Why is that important? There is mounting evidence that those signals influence which genes are "switched on" and which proteins are thus created. Health and disease depend upon which signals help create which proteins. And, what are these signals that reach our 50 trillion cells and consequently affect the signals to the genes and DNA: thoughts; perceptions; beliefs; toxins; hormones; nutrients; food. Positive thoughts and so on create different signals and responses than negative thoughts, toxins, poor nutrition, pesticides, herbicides, hormone-mimicking substances derived from some of our food and environmental chemicals, and so on. What this means is that we are much more empowered to help create and alter our health than we had thought before. For additional evidence and fascinating reading, I invite you to change your life by reading [The Biology of Belief: Unleashing the Power of consciousness, matter and miracles](#) by cellular biologist Bruce H. Lipton, PhD. Also, check out the following review of that book to get a taste of the amazing discoveries it has to reveal. Then consider the implications for your health.

Book Review:

[The Biology of Belief: Unleashing the power of consciousness, matter and miracles](#)

The 'central dogma' of modern orthodox biology is that life is controlled by genes. In *The Biology of Belief*, cell biologist Bruce Lipton explains how the latest research has shown genetic determinism to be fundamentally flawed, and presents a very readable account of the 'new biology'. He says that research into the way cells receive and process information shows that a cell's life is controlled not by its genes but by the physical and energetic environment, which, in the case of humans, includes our thoughts. He writes: 'The belief that we are frail biochemical machines controlled by genes is giving way to an understanding that we are powerful creators of our lives and the world in which we live' (p. 17). The 'new' biology is an advance on the old one but, as we will see, it still has severe limitations.

Genetic delusions

Since the cracking of the genetic code by James Watson and Francis Crick in 1953, DNA has assumed an all-powerful status. At first it was thought to be

responsible only for our physical characteristics, but then scientists started claiming that our genes control our emotions and behavior as well. Lipton says that genes are simply molecular blueprints used in the construction of cells, tissues, and organs. But even this goes too far: genes are blueprints for the production of proteins – how proteins assemble themselves into cells, tissues, and organs is not understood.

Prior to the Human Genome Project, scientists held that one gene was needed to provide the blueprint for each of the over 100,000 different proteins that make up our bodies. Since there are also over 20,000 regulatory genes, the human genome was expected to contain a minimum of 120,000 genes located in the 23 pairs of chromosomes. However, geneticists were shocked to discover that the human genome consists of only about 25,000 genes. More than 80% of the DNA that was thought to be required does not exist! The one-gene, one-protein concept, which was a fundamental tenet of genetic determinism, has therefore had to be consigned to the scrap heap.

There is not much difference in the total number of genes found in humans and in primitive organisms. The microscopic nematode roundworm known as *Caenorhabditis elegans* has a body consisting of 969 cells and a simple brain of about 302 cells, yet its genome consists of as many as 24,000 genes. This means that the human body, comprising over 50 trillion cells, contains only 1000 more genes than this lowly worm. The fruit fly has 15,000 genes – 9000 fewer than the more primitive *Caenorhabditis* worm. Humans have roughly the same number of genes as mice! As geneticist and Nobel Prize winner David Baltimore has said, 'it is clear that we do not gain our undoubted complexity over worms and plants by using more genes. Understanding what does give us our complexity ... remains a challenge for the future' (p. 64).

Darwinism and epigenetics

Lipton argues that genes cannot control life because they cannot turn themselves on or off. That is done by signals from the cellular environment. Epigenetics, the study of the molecular mechanisms by which the environment controls gene activity, is today one of the most active areas of scientific research. Environmental influences, including nutrition, stress, and emotions, can modify genes, without changing their basic blueprint, and these modifications can be passed on to future generations. DNA makes up only half the content of chromosomes; the other half consists of regulatory proteins, which are turning out to play as crucial a role in heredity as DNA. Studies of protein synthesis reveal that epigenetic factors can create 2000 or more variations of proteins from the same gene blueprint.

Biologists' central dogma (first formulated by Francis Crick) posits the 'primacy of DNA', involving a one-way flow of information from DNA to RNA to proteins. Lipton, on the other hand, argues for the 'primacy of the environment'.

Regulatory genes direct the activity of protein-encoding genes, but environmental signals control how regulatory proteins bind to DNA. The flow of information is therefore: environmental signal – regulatory protein – DNA – RNA – protein. Information can also flow in the reverse direction, but subject to tight restrictions: RNA can rewrite DNA, protein antibodies can change DNA, and changes in DNA influence the binding of regulatory proteins.

Evidence for the role of epigenetic mechanisms has become so compelling that some scientists have started speaking favorably again of Jean-Baptiste de Lamarck (1744-1829), the much-scorned evolutionist who believed that traits acquired as result of environmental influence could sometimes be passed on to offspring. The genome is certainly turning out to be far more fluid and responsive to the environment than previously supposed. It is clear that DNA does not control biology, and that information can be transmitted to descendants in ways other than through the base sequence of DNA.

Whereas traditional darwinism sees evolution as essentially random, purposeless, and violently competitive, Lamarck suggested that evolution was based on cooperative interaction among organisms and their environment. In Darwin's Blind Spot (2002), Frank Ryan chronicles a number of striking examples of cooperation among organisms. For instance, there is a yellow shrimp that gathers food while its partner gobi fish protects it from predators. There is also a species of hermit crab that carries a pink anemone on top of its shell. Fish and octopuses like to feed on hermit crabs, but when they approach this species, the anemone shoots out its brilliantly colored tentacles, with their microscopic batteries of poisoned darts, and stings the potential predator. In return, the anemone eats the crab's leftover food.

We now know that genes are transferred between members of the same species and of different species. This highlights the dangers of genetic engineering. Tinkering with the genes of a tomato, for example, could alter the entire biosphere in unforeseen ways. One study has shown that when humans digest genetically modified foods, the artificially created genes transfer into and alter the beneficial bacteria in the intestine. Similarly, gene transfer among genetically engineered agricultural crops and surrounding native species has given rise to highly resistant superweeds. As Lipton says, scientists are messing around with our genes and environment without understanding how interconnected everything is.

Cells, brains, membranes

Although cells appear to be anatomically simple, they display incredible complexity and power, and employ technologies that scientists have barely begun to understand. Like humans, single cells analyze thousands of stimuli from the microenvironment they inhabit, and select appropriate behavioral responses to ensure their survival. They are even capable of altering their own genes.

Lipton rejects the orthodox idea that the nucleus is the cell's brain. If their nuclei and genes are removed, cells can survive for up to two months or more. They continue to exhibit complex, coordinated, life-sustaining behaviors, but eventually die – not because they have lost their brain but because they have lost their reproductive capabilities and are unable to replace failed proteins or replicate themselves. In other words, the nucleus is the cell's gonad. Lipton comments:

Confusing the gonad with the brain is an understandable error because science has always been and still is a patriarchal endeavor. Males have often been accused of thinking with their gonads, so it's not entirely surprising that science has inadvertently confused the nucleus with the cell's brain! (p. 66)

Lipton proposes that the true brain controlling cellular life is the membrane – the 'magical mem-brain', as he calls it. The membrane is a semi-permeable, three-layered skin, only seven millionths of a millimeter thick, which holds the contents of a cell together. But behind its apparent simplicity lies great functional complexity. For instance, prokaryotes, which include bacteria and other microbes, consist of a cell membrane enveloping a droplet of cytoplasm, yet they display 'intelligence'. They can sense the presence of food and propel themselves towards it, and they can recognize toxins and predators and take evasive action.

Instead of the cell's operations being controlled by DNA blueprints stored in the nucleus, as conventional biology would have us believe, Lipton proposes that this is done by integral membrane proteins (IMPs) – which include receptor (awareness) and effector (action) proteins. The membrane's effector proteins, operating in response to molecular and radiant-energy signals which its receptors pick up from the environment, control the 'reading' of genes so that worn-out proteins can be replaced or new proteins created.

The cell's operations are therefore primarily molded by its interaction with the environment, not by its genetic code. Genes cannot preprogram a cell or an organism's life, because cell survival depends on the ability to dynamically adjust to an ever-changing environment. In Lipton's view, the membrane's function of interacting 'intelligently' with the environment to produce behavior makes it the true brain of the cell; if the membrane is destroyed, the cell dies. In multi-cellular organisms key functions of the membrane are taken over by specialized tissues and organs – nervous system, lungs, muscles, etc.

Drugs and health

Millions of people attribute failing health not to a combination of mental, physical, and emotional causes, but simply to the inadequacies of their body's biochemical mechanics. Increasingly, the first choice in dealing with unruly children, for example, is to medicate them to correct their 'chemical imbalances', rather than grappling with what is truly going on in their bodies and minds.

Although scientists have linked lots of genes to lots of different diseases and traits, they have rarely found that one gene causes a particular disease or trait. Lipton points out that the diseases that are today's scourges – diabetes, heart disease, and cancer – are not the result of a single gene, but of complex interactions among multiple genes and environmental factors. Only 5% of cancer and cardiovascular patients can attribute their disease to heredity.

He argues that drugs and surgery are powerful tools when not overused, but the notion of simple drug fixes is fundamentally flawed. Every time a drug is introduced into the body to correct function A, it inevitably throws off function B, C, or D. That is why pharmaceutical drugs come with information sheets listing numerous side effects, ranging from irritating to deadly. People who take over-the-counter antihistamines, for example, may experience allergy relief but also the side effect of feeling drowsy. Synthetic hormone replacement therapy has been shown to have disturbing side effects that result in cardiovascular disease and neural dysfunctions such as strokes.

According to a recent study, iatrogenic illness – illness resulting from medical treatment – is the leading cause of death in the US, and adverse reactions to prescription drugs are responsible for more than 300,000 deaths a year.

We have been programmed by pharmaceutical corporations to become a nation of prescription drug-popping junkies with tragic results. ... Using prescription drugs to silence a body's symptoms enables us to ignore personal involvement we may have with the onset of those symptoms. (pp. 109, 113)

Research suggests that our hyper-vigilant lifestyle has a severe impact on the health of our bodies. Almost every major illness is linked to chronic stress, and the inhibition of neuronal growth by stress hormones can lead to depression.

Lipton argues that far more money should be spent on research into alternative medicine, such as acupuncture, chiropractic, homeopathy, and massage therapy, which are based on the belief that 'energy fields' help to control our physiology and health.

Mind over matter

The well-known placebo effect dramatically demonstrates the healing power of the mind: 'fake' drugs often prove just as effective as genuine chemical cocktails, provided patients believe they are receiving the 'real thing'. The placebo effect has proved powerful in treating various diseases, including asthma and Parkinson's disease. In a study of severely depressed patients, 50% of those taking drugs improved but so did 32% of those taking a placebo. In more than half the clinical trials for the six leading antidepressants, the drugs did not outperform placebo sugar pills. Interestingly, antidepressants have performed

better and better in clinical trials over the years, suggesting that slick marketing has produced a placebo effect, demonstrating that beliefs are contagious! In a study of patients with severe knee pain, those who received surgery improved, but those in the placebo group (incisions were made in their knees and then sewed up) improved just as much.

The opposite of the placebo effect is the nocebo effect. Negative thinking – including the hope-deflating messages that physicians sometimes convey to their patients – can damage health. For instance, a man suffering from cancer of the esophagus – a condition considered at the time to be 100% fatal – died a few weeks after his diagnosis, yet an autopsy found that there was not enough cancer in his body to kill him. Our positive and negative beliefs impact not only our health, but every aspect of our lives.

In 1952, Dr Albert Mason, a British physician, used hypnosis to successfully treat a very severe case of warts, which covered most of a 15-year-old boy's body. Mason was later shocked to learn that the boy was not in fact suffering from warts but from a lethal genetic disease called congenital ichthyosis. This shows that the mind can even override genetic programming. Mason tried to cure a number of other ichthyosis patients but never with the same success. He attributed this to his own irrepressible doubts about the ability of hypnosis to cure this genetic condition – in contrast to simple warts.

According to the germ theory, bacteria and viruses are the cause of disease. This theory was developed in the 19th century and was initially very controversial. One critic was so convinced it was wrong that he brazenly gulped down a glass of water laced with vibrio cholerae, the bacteria thought to cause cholera. Astonishingly, the man's belief was so strong that he was completely unaffected by the virulent pathogen! Another demonstration of mind over matter is fire walking: thousands of people have managed to walk across hot coals, while those who waver in their beliefs suffer burns. There are also many unexplained cases of terminal cancer patients recovering their lives through spontaneous remissions.

Lipton says that thoughts directly influence how the physical brain controls the body's physiology. Thought 'energy' can activate or inhibit the cell's function-producing proteins ... The fact is that harnessing the power of your mind can be more effective than the drugs you have been programmed to believe you need. (p. 125)

He stresses that this requires not just positive thinking, but also eliminating the habitually negative and self-sabotaging thought patterns of the subconscious mind.

