

The Biology of Belief Interview by Bruce Lipton

[Inter view with Bruce in Planeta Magazine - Part one](#)

The Biology of Belief book is now available in Portuguese by Butterfly Editora Ltda in Brazil. The following interview was done with Mônica Tarantino & Eduardo Araia for Planeta Magazine, May 2008. For the Portuguese translation, see Entrevista, Edição 428 – Maio/2008, at www.revistaplaneta.com.br.

1 You are one of the most important voices of a new biology. What are the differences between the traditional biology and your version?

When I first introduced the concepts that I collectively I refer to as the “new biology” in 1980, almost all of my scientific colleagues ignored these new ideas as unbelievable and some even went as far as calling it a scientific “heresy.” However, since that time, conventional biology has been undergoing a profound revision of its basic beliefs. The new revisions of biomedicine are leading traditional science toward the same conclusions I had twenty-five years ago. The funny part is that when I first presented public lectures on the “new biology” in 1985, my scientific peers walked out on my lectures considering the ideas as flights of fantasy. Today, when presenting the same information, research scientists are quick to respond, “So what is it that you are saying that is new?” Indeed, our biological beliefs are evolving.

While leading edge science has acquired a different view of how life works, the general public is still being educated with the outdated beliefs. Scientists know that genes don't control life, yet most media (TV, radio, newspapers and magazines) are still informing the public that genes control their lives. People are still primarily attributing their deficiencies and illnesses to genetic dysfunctions. Since we are taught that genes “control” life, and as far as we know we did not select our genes nor can we change them, then we perceive we are powerless in controlling our biology and behaviors. The beliefs about genes cause the public to perceive of themselves as “victims” of heredity. Yet today there are still some very significant differences between the views of conventional biology and the insights offered by the “new biology.” Firstly, traditional biologists still acknowledge that the nucleus (the cell organelle that contains the genes) “controls” biology, an idea that emphasizes genes as the “primary” controlling factor in life. In contrast the “new biology” concludes that the cell membrane (the “skin” of the cell) is the structure that primarily “controls” an organism's behavior and genetics.

The membrane contains the molecular switches that regulate a cell's functions in response to environmental signals. For example, a light switch can be used to turn a light on and off. Does the switch “control” the light? Not really, since the switch is actually “controlled” by the person that turns it on and off. A membrane switch is analogous to a light switch in that it turns a cell function or the reading of a gene on and off...yet the membrane switch is actually activated by an environmental signal. So the “control” is not in the switch, it is in the environment. While conventional biologists are now recognizing

that the environment is an important contributor in regulating biology, the “new biology” emphasizes the environment as the primary control in biology.

Secondly, conventional biomedical science emphasizes that the physical “mechanisms” that control biology are grounded in Newtonian mechanics. In contrast, the “new biology” acknowledges that the mechanisms of the cell are controlled by quantum mechanics. This is a major difference in perspective for the following reason: Newtonian mechanics places emphasis on the material realm (atoms and molecules), while quantum mechanics focuses upon the role of the invisible energy forces that collectively form the “field” (see *The Field* by Lynne MacTaggart).

Medicine sees the body as strictly a mechanical device composed of physical biochemicals and genes. If the operation of the body is dis-eased, medicine uses physical drugs and chemistry to heal the body. In the quantum universe, it is recognized that invisible energy fields and physical molecules cooperate in creating life. In fact, quantum mechanics recognizes that the invisible moving forces of the field are the primary factors that shape matter. At the very leading edge of biophysics today, scientists are also recognizing that the body’s molecules are actually controlled by vibrational energy frequencies, so that light, sound and other electromagnetic energies profoundly influence all the functions of life. This new insight about the power of energy forces provides an understanding of how Asian energy medicine (e.g., acupuncture, feng shui), homeopathy, chiropractic and other complementary healing modalities influence health.

Among the “energy” forces that control biology are the electromagnetic fields that are generated by the mind. In conventional biology, the action of the mind is not really incorporated into the understanding of life. This is very surprising in that medicine acknowledges that the placebo effect is responsible for at least one third of all medical healing, including surgery. The placebo effect occurs when someone is healed due to their belief (action of the mind) that a drug or medical procedure is going to heal them, even though that drug can be a sugar pill or the procedure a sham. Interestingly, the influence of this very valuable healing ability is generally disregarded by conventional allopathic medicine and even “despised” by the drug companies that prefer to see drugs as the only remedy for disease.

The “new biology” emphasizes the role of the mind as the primary factor influencing health. This is an important difference because it acknowledges that we are not necessarily victims of the biology, and that with proper understanding we can use the mind as a power that controls life. In this reality, since we can control our thoughts, we become masters of our biology and not victims of hardwired genes.

Thirdly, the “new biology” emphasizes that evolution is not driven by the mechanisms emphasized in Darwinian biology. While the “new biology” still recognizes that life evolved over time, it suggests that it was more influence by Lamarckian mechanisms than Darwinian mechanisms. (This answer is discussed in more detail in the Darwinian question below.)

In conclusion, the intention of the “new biology” is not so much directed toward the scientific community (which has already begun revising its belief system) as it is

intended for the public (lay audience) that is still being mis-educated with old, outdated and limiting beliefs. The public needs to be aware of the new science for it represents knowledge that will allow them to have more power over their lives.

This new knowledge is about “self.” Since knowledge is power, then “knowledge of self” directly means self-empowerment, exactly what we need during these troubling times for the planet.

2 Do you experience any kind of pressure because of your ideas? If so, what sort of pressure?

Not really. Most conventional scientists simply ignore my ideas and instead favor maintaining conventional beliefs, in spite of the fact that medicine has become the leading cause of death in the United States (see statistics for iatrogenic illness). However, since 2000, I have noted that more and more scientists are beginning to acknowledge that there is indeed a real theoretical basis for the “new science” I present. On a daily basis, newly published scientific research is continuously confirming the ideas presented in *The Biology of Belief* book.

For example, Chapter 2 in my book is about how the environment programs the genetic activity of cloned cells. I titled this chapter *It’s the Environment, Stupid*. Four months after the book was published, the prestigious scientific journal *Nature* had a lead article on how genes in stem cells were being programmed by the environment. They titled their article *It’s the Ecology, Stupid!* I was excited because they were verifying what I wrote and even used the exact same title. (There is an old saying, “Imitation is the sincerest form of flattery,” and indeed, I was flattered by their article!)

It is very difficult for scientists to let go of established beliefs they have been trained with and use in their research. When new insights of science come into their field, many scientists stubbornly prefer to hold on to their outdated views. I believe that science is unintentionally holding back from acknowledging necessary advances we could use in keeping our world from crashing because of the difficulty in releasing limiting beliefs. Yet the new science insights account for what we already know while providing explanations for many of the unexplained observations such as miraculous healings and spontaneous remissions.

3 How does your theory contest the Darwinism? Could you describe and explain these main aspects?

Firstly, people confuse evolution with Darwinian theory. Jean-Baptiste de Lamarck scientifically established evolution in 1809, fifty years before Darwin’s theory. Darwinian theory is about “how” evolution occurred. Darwinian theory offers two basic steps: 1) Random Mutation- the belief that gene mutations are random and not influenced by the environment. Simply, evolution is driven by “accidents.” 2) Natural Selection- Nature eliminates the weakest organisms in a “struggle” for existence. Simply, life is based upon competition with winners and losers.

New scientific insights offer a different picture. In 1988, research established that when stressed, organisms have molecular adaptation mechanisms to select genes and modify their genetic code. Simply, organisms can change their genetics in response to environmental experiences. Consequently, there are now two types of genetic mutations: “random” and “adaptive.” In accepting “directed” mutations as an evolutionary mechanism, logic would select that process as highly probable in shaping the evolution and beautiful organization of the biosphere. While it could always be argued that life arose through “accidental” random mutations, it would be highly improbable that this mechanism would be the primary drive force behind evolution.

Conclusion: the order of life implies we are not likely accidents of random evolution, for we evolved from, and are totally connected to, everything on this planet. This new vision reveals that human influences in destroying the environment are actually leading to our own extinction. Humans were truly meant to be the gardeners in the Garden of Eden.

Darwinian theory further emphasizes that life is based upon a “survival of the fittest in the struggle for existence,” implying that it is a “dog-eat-dog” world where we must struggle to stay alive. This idea of “struggle” was originally based upon Thomas Malthus’ theory that predicted: “Animals reproduce so quickly that there will come a time when there will be too many animals and not enough food.” So life will inevitably result in a struggle and only the “fittest” will survive the competition. This idea has carried over into human culture so that we see our daily lives as one long competition driven by the fear of losing the struggle. Unfortunately, Malthus’ idea was found to be scientifically incorrect, consequently the competitive character of Darwinian theory is basically flawed.

New insights offered in biology are now revealing that the biosphere (all the animals and plants together) is a giant integrated community that is truly based upon a cooperation of the species. Nature does not really care about the individuals in a species; Nature cares about what the species as a “whole” is doing to the environment. Simply, Nature does not care that we have had an Einstein, a Mozart or a Michelangelo (examples of humanity’s “fittest”), Nature is more concerned about how human civilization is cutting down the rain forests and changing the climate.

The “new biology” emphasizes that evolution is 1) not an accident and 2) is based upon cooperation, these insights are profoundly different than those offered by conventional Darwinian theory. A newer theory of evolution would emphasize the nature of harmony and community as a driving force behind evolution, ideas that are completely different than today’s notion of life/death competition.

4 Could you tell us how you have concluded we can command and modify our cells and genes? You were part of the beginning of the researches about stem cells. Was it from that experience that you concluded the characteristics and behavior of the cells reflect their environment and not their DNA?

My first scientific insights were based upon experiments I started in 1967 using cultures of cloned stem cells. In these studies, genetically identical cells were inoculated into three culture dishes, each having a different growth media (the cell’s “environment”). In one

dish the stem cells turned into muscle, in the second dish the genetically identical cells turned into bone cells and in the third dish, the cells became fat cells. The point: the cells were genetically identical, only the “environments” were different. My experimental results, published in 1977, reveal the environment controlled the cell’s genetic activity.

These studies show that genes provide cells with “potentials,” which are selected and controlled by the cell in response to environmental conditions. Cells dynamically adjust their genes so that they can adapt their biology to the demands of the environment. My studies led me to the fact that the nucleus, the cytoplasmic organelle containing the genes, was not controlling the cell’s biology even though this is the belief that is still acknowledged in today’s textbooks.

I later found that the cell’s membrane (its “skin”) was actually the equivalent of the cell’s brain. Interestingly, in human development, the embryonic skin is the precursor of the human brain. In the cells and in the human, the brain reads and interprets the environmental information and then sends signals to control the organism’s functions and behaviors.

5 Later, you stated that the transformation of cells from the blood vessels in other tissues was related to signals sent by the central nervous system. So is it correct to say that it is possible to control the formation of the blood vessels from our mind? What is the physiological and mental path and the benefit of this power?

The structure and behavior of the blood vessels are highly regulated by the body so that the cardiovascular system can provide fresh oxygenated blood to tissues based upon their “needs.” If you are running away from a leopard you need blood to nourish your arms and legs as they run away from the threat, and when you have eaten dinner, you need blood in the gut to nourish the processes used for digestion. The point: different behaviors require different blood flow patterns. The body’s blood flow pattern is regulated by the brain that interprets the body’s needs and then sends signals to the blood vessels to control the function and genetics of the cells lining the blood vessel. Blood serves as the provider of both the body’s nutrition and of the immune system. The blood vessels have different behavioral characters when they are involved with nutrition function (growth) or when they are engaged in an inflammation response (protection).

The functional and structural status of the blood vessel is based upon the body’s needs. The mind is the primary director of the body’s needs, so thoughts and beliefs acting through the nervous system directly results in the release of neurochemicals that influence the genetics and behavior of the blood vessels. Consequently, our mind can enhance our health by properly regulating vascular activity and can just as easily sabotage our health if the mind sends inappropriate regulatory signals to the body’s systems.

6 But for them to transform into a new type of cell isn’t it necessary for them to have a “multipotent” DNA? What can determine the changes in the tissues and in what way?

All cells in the body have the same genes (except the red blood cells that do not have a nucleus or genes). Every cell is endowed with the same genetic potential to form any tissue or organ. While most people think genes control the cell's biology, genes are simply "blueprints" used in making the body's protein building blocks. In early stages of development, all the genes in embryonic cells can be activated so these cells are truly "multipotential cells." As development proceeds and cells differentiate into specialized tissue and organ cells, this maturation is accompanied by a "masking" of genes that will not be expressed by a particular cell. For example, when a cell differentiates into a muscle cell, the genes in its nucleus that can make nerve cells, bone cells, or skin cells are "inactivated." The cell loses developmental potential as it matures.

Recently, scientists have found a way to "unmask" genes. They are able to reactivate gene programs that have been disabled during development. In their study, they uncovered genes in a skin cell and reverted the mature, differentiated skin cell into a "stem cell," a more primitive developmental state. New insights reveal that in response to certain environmental conditions (for example, the release of specific hormones and growth factors), cells activate or mask their genes in order to fine-tune their behavior and activity.

7 Did you test this model to show and replicate your theory to show the other scientists your point of view?

Back in the late 1970's to early 1990's, my research "conflicted" with the general beliefs held by cell biologists. Before I was able to publish research I did at University of Wisconsin or at Stanford University, my colleagues were consistently shown the results of these "strange" experiments, in order to give them a chance to critique my studies and be sure I was accurate in my interpretation of the results.

In fact, my last published research articles at Stanford University Medical School were delayed for almost a year until all those involved in the studies fully accepted the results and agreed on the interpretation of these unusual experiments. Even though they were intimately involved with these studies, the more conventional scientists in the group chose to ignore the results and consider them to be an "exception" to the established beliefs. Unfortunately, scientific principles cannot have "exceptions," If a principle has exceptions, it simply means the assumed belief is incomplete or incorrect!

8 What are the consequences of this conclusion for the science? Does it represent the possibility of a change of paradigm?

When I first published my studies in the 1970's, the results completely challenged the beliefs about genetics at the time. Many scientists totally ignored my research because it did not conform to conventional assumptions. However, the work was important for it revealed that our lives were not preprogrammed in the genes. The new science showed that we could actively influence our genetics. It showed how life experiences and education radically change the readout of our genome.

What was "heresy" when I first published this work is now becoming conventional belief

in cell biology. In fact, today when I talk about my experiments and the strange results, many scientists say, “So what’s so new in what you are talking about!” We have come a long way since 1977! The paradigm has already changed and the important self-empowering principles of the new science of epigenetics are slowly making their way into the conventional world.

[Interview with Bruce in Planeta Magazine - Part 2](#)

9 Who is in charge in our body?

During the first few weeks of embryonic development the genes are primarily controlling the unfolding of the body plan of a human (e.g., creating two arms, two legs, ten fingers and ten toes, etc.). Once the embryo takes on the shape of a human, it is called a fetus. In the fetal stage of development, the genes take a back seat to control by environmental information. During this period the fetal body’s structure and function are adjusted in response to the mother’s perception of the environment. Maternal hormones, growth factors and emotional chemistry controlling the mother’s biological response to the environment pass through the placenta and influence the genetics and behavioral programming of the fetus.

I refer to this period where the mother’s perception and interpretation of the world are relayed to the fetus via the chemistry of the mother’s blood as “Nature’s Head-Start Program.” This maternally-relayed “information” about environmental conditions allows the developing fetus to adjust its biology so that when it is born, it’s structure and physiology will be more in tune with the world in which the child will live. The “reading” of the environment’s signals (in the womb and after birth) enables the body’s cells and their genes to make appropriate biological adjustments to support and sustain life. Since the environmental signals are read and interpreted by the mind’s “perceptions,” the mind becomes the primary force that ultimately shapes an individual’s life and health.

10 Please, talk about how the energy impacts cells. Could you describe this mechanism?

Using conventional human senses (e.g., sight, sound, smell, taste, touch, etc.) we have come to perceive the world in which we live in terms of physical and non-physical reality. For example, apples are physical matter and television broadcasts are in the realm of energy waves. Around 1925, physicists adopted a new view of the physical reality that has become known as quantum mechanics.

Originally, science thought that atoms were made up of smaller particles of matter (electrons, neutrons, and protons), however modern physicists found that these subatomic particles were actually immaterial energy vortices (resembling nano-scaled tornados). In truth, atoms are made out of energy and not physical matter. So everything that we thought was physical matter is in reality made up of focused energy waves or vibrations.

Therefore the whole Universe is actually made out of energy, and what we perceive as matter is also energy. The collective energy waves of the Universe, which might be referred to as “invisible moving forces,” comprise the field (for more information see Lynne MacTaggart’s book, *The Field*).

While quantum physics recognizes the energetic nature of the Universe, biology has never really incorporated the role of invisible moving forces in its understanding of life. Biology still perceives of the world in terms of Newtonian physical molecules, pieces of matter that assemble like locks and keys. Biochemistry emphasizes that life functions result from the binding of physical chemicals similar to an image of puzzle pieces plugging into each other.

Such a belief insists that if we want to change the operation of the biological machine then we must change its chemistry. This belief system emphasizing “chemistry” leads to a healing modality that focuses upon the use of drugs...allopathic medicine. However, conventional medicine is no longer scientific in that it still emphasizes the Newtonian idea of a mechanistic world and does not recognize the role of the invisible moving forces that comprise the world of quantum mechanics.

In physics there is an understanding that if two things have the same energy vibrations, they share “harmonic resonance,” meaning that when one vibrates it causes the other to vibrate. For example, when a vocalist can sing the right note, one in tune with the atoms in a crystal goblet, their voice (vibration) can cause the goblet to shatter. The energy of the voice combines with the energy of the goblet’s atoms and the two energies become so powerful together, it causes the goblet’s atoms to fly apart and break the glass.

Some energies when added together become constructive, that is the two energies are summed together producing a more powerful vibratory energy. However, two energy waves can interact and cancel each other out, so when combined, the power of the combined energies become 0. In humans, when energies are constructive and give more power, we actually physically experience these energies “good vibes.” However, when two energies cancel each other out, we experience this energetically weakened state as “bad vibes.”

Microwave oven energy vibrations “harmonically resonant” to certain food molecules cause them to move faster which results in food getting hot. Noise canceling earphones (e.g., made by Bose company) generate vibrational frequencies that are “destructive” (out of phase) to ambient noise frequencies and this causes the background sounds to be cancelled-out and the sound disappears. Biologists are now finding that biological functions and molecules can be controlled using harmonic vibratory frequencies, including light and sound vibrations.

It is necessary that biology incorporate an understanding of energetics and energy fields, because energy waves profoundly influence matter. A great quote by Albert Einstein states: “The field is the sole governing agency of the particle.” Einstein is saying that the invisible forces (the field) are responsible for shaping the material world (the

particle). To understand the character of a person's body or health, one must consider the role of the invisible energetic field as a primary influence. The problem is that conventional medicine has not really acknowledged that the field even exists, although the "influence of invisible moving forces" has been demonstrated in published scientific articles for over fifty years.

The conventional model of medicine based upon Newtonian physics has provided for miracles such as heart transplants and reconstructive surgeries. However, conventional allopathic medical sciences do not know how cells actually work and are still inappropriately emphasizing the role of genes in controlling our lives and health issues. Biomedicine is still steeped in a mechanistic, material universe. Medical science focuses its attention on the physical body and material world and have completely ignored the role quantum mechanics.

Once medicine starts to understand and acknowledge the influences of energy fields as important, influential determinants, they will then have a more realistic picture of how life works. Simply stated, conventional medicine alone is not truly scientific in that it does not invoke the Universe mechanisms recognized by quantum physics.

11 How does the power of energy fields control the body's biochemistry?

The functions of the body are derived from the movement of molecules (primarily proteins). Molecules change shape (they move!) in response to environmental electromagnetic charges. Physical influences such as hormones, growth factors, food molecules and drugs can provide these movement-inducing electrical charges. However, harmonically resonant vibrational energy fields can also cause molecules to change shape and activate their functions. Chemicals can activate protein enzymes in a test tube and the same proteins can be activated using electromagnetic frequencies including light waves.

The problem lies in the fact that conventional biology does not emphasize the physics of quantum energy fields in understanding the mechanics of the cell. Therefore when the topic of "energy" healing is discussed, conventional science ignores it as irrelevant because it is not in their textbooks. Unfortunately for conventional medicine, the newer scientific insights into how molecules move and generate life are recognizing the powerful role of energy fields in shaping the structure and behavior of matter, factors that control life.

12 Do the biologists who believe in evolutionary theory refuse the idea of powerful energy fields?

Conventional evolution theory is based upon the fact that genetic mutations are random events (accidents) that are not connected to the conditions of the environment. Therefore, evolution theory does not consider either the physical environment or the energetic environment as relevant in shaping genetic mutations. However, the notion of accidental mutations as the source of evolutionary diversity is giving way to an understanding that cells can generate what are called adaptive, directed or beneficial mutations wherein

organismal interactions with their environment play an active role in shaping the cell's genome.

Once the mutation event occurs (random or adaptive), conventional science then emphasizes the role of the environment as the selection factor in weeding out organisms with dysfunctional mutations from those with beneficial mutations. This is referred to as natural selection. However, only the physical environment is considered in this selection process, consequently science does not factor in the role of the invisible energy fields as a contributing element in "selecting" or influencing the survival of organisms.

*13 Could you describe the cells reactions above stimuli?

Discussed in Question #10 and #11 above.*

*14 Can you explain how the cells respond to energy patterns and in what ways it relates to quantum physics? Before, could you define quantum physics? *

As described above, quantum physics is the newer science of how the universe "works," and it is based upon the whole Universe being a creation made out of energy. In contrast, the outdated version of how the Universe worked, Newtonian physics, emphasized the role of matter as separate from energy.

In the old Newtonian physics version of life, cells are made out of pieces of matter (molecules) and could only be influenced by other pieces of matter (molecules such as hormones or drugs). The newer insights on molecules offered by quantum physics reveals that molecules are units of vibrating energy that can be influenced by both matter and invisible energy waves (harmonic resonance). Constructive interference (i.e., good vibes) and destructive interference (i.e., bad vibes) can control the movements of protein molecules.

Since life is derived from the movement of protein molecules, then it's understandable how energy fields influence life by causing molecules to change shape.

15 Your work concludes that evolution is based upon fractal geometry. Could you explain these ideas to a 14-year-old boy? If he understands, I will, too.

Understanding the definition of geometry explains why this math is important for studying the structure of our environment and biosphere. Geometry is the math that describes "the way the different parts of something fit together in relation to each other." Geometry is the math of how to put structure into space. Until 1975, the only geometry we studied was Euclidian geometry, which is easy to understand because it deals with structures like cubes, spheres and cones that can be mapped on graph paper.

However, Euclidian geometry does not apply to Nature. In Nature, most structures display irregular and chaotic-appearing patterns. These natural structures can only be created by using the recently discovered math called fractal geometry. The mathematics of fractals is amazingly simple because you need only one equation, using only simple multiplication and addition. When the equation is solved, the result is put back into the

original equation and the equation is solved again. This process can be repeated an infinite number of times.

Inherent in the geometry of fractals is the creation of ever-repeating, “self-similar” patterns nested within one another. You can get a rough idea of “repeating shapes” by picturing the popular toy, hand-painted Russian nesting dolls. Each smaller doll (structure) is a miniature, but not necessarily an exact version of the larger doll (form). This new math is the science behind the old saying, “As above, so below.”

In a fractal Nature, the appearances of structures at any level of organization are “self-similar” to the structures found in higher or lower levels of organization. Therefore a fractal understanding of the organization at one level is applicable to understanding an organization at another level. When applied to the new biology, this new math reveals that a cell, a human and human civilization are “self-similar” images at different levels of organization. So by studying a cell, one can learn about a human. By studying the community of cells in a human body, one can learn the nature of forming a successful community of humans that form the larger organism, humanity.

Perhaps we will find the answers for saving civilization through a study of the very successful cellular civilizations beneath our skin

16 Are there any scientists following these ideas? Who?

Every week the current scientific journals are publishing exciting new research on the topics emphasized in the “new biology.” One of the new stars in the science of epigenetics is Randy Jirtle (Duke University in Durham, N.C, USA) who is providing amazing experiments on using epigenetic control mechanisms to reverse genetic mutations. Dr Andrew Weil from the University of Arizona is a leading physician in complementary medicine.

17 If genes or DNA do not control our body, what is their function?

There are about 23,000 “conventional” genes that are actually molecular “blueprints” used in making proteins, the molecular building blocks of the cell and the human body. A second type of gene is called a “regulatory” gene whose function is to “control” the activity of other genes.

The problem that science encountered with the results of the Human Genome Project is that the body has over 100,000 different proteins and since each protein needs a gene as a blueprint for its construction, it was believed that the human genome would have over 100,000 genes. Unfortunately, the results of the Genome Project revealed that there were only 23,000 genes. This finding pulled the rug out from conventional science’s belief in genetic control...for there were too many “missing” genes.

The old belief in genetic control is now giving way to the new science of epigenetic control (epi- in Latin means above, so epigenetic control literally reads as “control above

the genes”). Epigenetic control mechanisms connect environmental signals (what’s going on in the world) with the control of gene activity. Epigenetic mechanisms turn gene activity on or off and they also control how much protein will be made from each gene. More amazingly, epigenetic mechanisms can be used to create over 30,000 different variations of protein molecules from an average gene.

Meaning: Genes are potentials that are selected and shaped by epigenetic mechanisms that are responding to environmental signals. Genes are “blueprints” for the body’s construction and epigenetic mechanisms resemble a contractor that can select and modify the gene blueprints to fit the perceived needs of the body.

18 How can your ideas influence our everyday life? What could or should believing that genes do not govern our bodies – but are governed by our mind instead – change in our routine?

In biology education, from elementary school through introductory college biology courses, students get an incomplete understanding of how life works. Most people are educated with the belief that genes “control” life. This incorrect idea is consistently repeated in newspaper and magazine stories about the discovery of genes claimed to control this trait or that disease. From their abbreviated education, most people believe that their fate is programmed in their genes. This belief is especially strong when a person realizes that cancer, heart failure or some other disease “runs” in their family.

Since we didn’t pick our genes, and since we cannot change them, we buy into the assumption that we are “victims” of heredity. Realizing that we are stuck with our genes and that we can’t do anything about them, most people resign to the belief that they are powerless in controlling their lives. Because of this belief, people become irresponsible when it comes to matters of their own health. They think, “If I can’t do anything about it anyway...why should I care.”

The new science reveals that our thoughts actively shape our genetics. This understanding is not new; it is precisely the foundation for the placebo effect. This effect is expressed when a person’s belief leads to a healing even though they have been given an inert sugar pill. Medicine recognizes that one third of all healings are the result of the mind acting through the placebo effect. The best example of the placebo effect is Prozac, which in laboratory tests was shown to be no more effective than a sugar pill. That’s a billion dollars of profit for the pharmaceutical companies from a drug that was no more effective than a placebo.

However, most people are unaware of the equally powerful but opposite effect known as the nocebo effect. The nocebo effect represents the consequences of bad or negative thoughts that can create disease or even kill. Science has already owned the mind’s role in healing, but there is no extensive research on the placebo and nocebo effects primarily because there is no money to be made by the pharmaceutical companies if people used their minds to heal themselves instead of using drugs.

If people were encouraged to use the placebo effect for healing, we could immediately reduce healthcare expenses by one third. This is the power of the placebo effect's influence and yet science has not even studied this effect. Imagine if we understood how to enhance the placebo effect, it is likely that we could easily reduce healthcare costs by more than 50% without doing anything more than changing our thinking!

19 Do you believe that we can avoid diseases like depression, diabetes or dementia if we send positive messages to our cells? How?

Only about 5% of human diseases are related to inborn genetic defects (also known as birth defects), this means that 95% of us were born with an adequate genome to have a healthy happy life. For those of us in the latter category that end up with health issues, the question is why are we having problems with our lives or health? It is now recognized that life style is the cause of over 90% of heart disease, over 60% of cancer and maybe all of Type II diabetes (see www.rawfor30days.com for video of how changing life style "cures" diabetes!!!!). The more we look, the more we see how our emotions, reactions to life, our fears, our poor diets, lack of exercise and excessive stress shapes our lives. The importance of all this is that we DO have significant control over our biology, and with our intentions, we can "reprogram" our health and our lives. Medicine seeks "cures" but does not really emphasize "prevention." If we were truly trained to know how our biology works, people would have the opportunity to influence their health and this would be the best preventative for disease. The public is programmed to see themselves as victims, yet we are truly powerful enough to control our health.

The problem with the notion of positive thinking as a cure for our ills is that the idea is truly misleading...positive thinking alone cannot get us to our wishes. The primary reason for the failure of positive thinking is that the programs operating from our subconscious minds, not from our "thinking" conscious minds, primarily control our lives. Unfortunately, as the name implies, the subconscious mind operates without observation by the conscious mind. In fact, the subconscious mind is essentially independent of the conscious mind.

We are now aware that most of the fundamental programs and "beliefs" stored in the subconscious mind were acquired before six years of age at which time the brain starts expressing alpha EEG waves associated with conscious activity. Therefore most of the subconscious mind's programming occurred while we were not even expressing conscious awareness. Psychologists reveal that many of our developmental experiences actually result in the programming of limiting or self-sabotaging beliefs in the subconscious mind.

The problem is further exacerbated by the fact that over 95% of our life is controlled by the invisible (i.e., generally not observed) programs stored in the subconscious mind. So while we may exercise wonderful positive healing thoughts with our conscious mind, our unconscious mind's programs and beliefs are actually shaping our lives. The problem lies in the fact that the behaviors programmed into the subconscious mind, before age six, were directly downloaded by observing others such as our parents, family and community.

Therefore the programs that control most of our cognitive activity (those from the subconscious mind) are actually those derived from others. The problem is that their behaviors may not in any way support the wishes, intentions and desires that we hold in our conscious mind. Since the subconscious mind essentially runs the show, we inevitably find conflict in trying to obtain the desires of our personal conscious mind (and this applies to the issue of positive thinking and why it frequently does not work).

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[Interview with Bruce in Planeta Magazine - part 3](#)

20 In fact, how do I know whether I have any control of my genes or not?

Recent research on identical twins showed how their lives changed their genetic read-out. When a sperm and egg come together at conception, the new fertilized cell has two complete sets of genes, one from the mother and one from the father. Most of the traits in the body only use one of the two genes for each trait provided by the two parents. When born, the genes selected in each identical twin's genome were about the same. However, as the siblings grow up and have different life experiences they end up selecting different gene combinations. Overtime, their life experiences lead to each having a unique gene profile different from their identical twin. This is simple proof of how life experiences lead to changes in gene activity.

21 You say that our genes are a kind of blueprint. And, more impressive, that they will be rewritten. How?

As mentioned above, genes are linear molecular blueprints; the sequence of DNA bases (also known as A, T, C and G, standing for adenine, thymine, cytosine and guanosine) represents the "genetic code." The sequence of the code is used in assembling a "string" of amino acids that form the backbone of a protein molecule. Different amino acid sequences make different shaped protein molecules. The shapes of the building block proteins are important in assembling the structure of the cell and for generating movements that create the cell's functions.

The DNA is a linear code. However, epigenetic mechanisms can cut the code up into pieces and reassemble them in a variety of ways. So that a single gene blueprint can be used to make 30,000 different versions of proteins. This means we can rewrite a healthy gene code and create a mutated protein product, OR, we can rewrite a mutant genetic code and create a normal protein product. Through epigenetic mechanisms we actively participate with our own gene activity. Unfortunately, we have been doing this all our lives, but we did not know we were doing it...and in the absence of that knowledge, we have not been aware that our lifestyle, thoughts, and emotions have been influencing our genetics.

22 Is it possible to reshape our deepest thoughts?

Absolutely! The problem is we did not understand the way our minds work. We have two minds, the conscious mind and the subconscious mind. The conscious mind is the one we associate with our personal identity, it is the thinking, reasoning mind. The subconscious mind, as the name implies, operates with out supervision of the conscious mind, it is the

“automatic mind.” If the beliefs in the subconscious mind conflict with the desires of the conscious mind...which one will win out? The answer is clearly the subconscious mind, for it is one million times more powerful an information processor than the conscious mind, and as neuroscientists reveal, it operates about 95% of the time.

We used to think that if the conscious mind became aware of our issues, it would automatically correct any negative programs downloaded in our subconscious mind. This is why people have a tendency to “talk to themselves” with the hope of changing limiting subconscious programs. Unfortunately, this does not work. The reason, the subconscious mind is like a tape player, it records behavior and at the push of a button, the program will replay over and over again (habits). The problem is there is no “entity” in the subconscious mind that “listens” to what the conscious mind wants! It is simply a tape recorder. One can consciously change the subconscious mind’s programs, but not by talking to or reasoning with it.

There are three ways that are very effective in changing old, limiting or sabotaging beliefs in the subconscious mind: Buddhist mindfulness, clinical hypnotherapy and an exciting new healing modality frequently called “energy psychology.” Discussions of these different programming methods are available in the Resource section on my website (www.brucelipton.com)

23 Have you seen this situation in your life? Could you give us an example?

I first started writing my book in 1992 and over 15 years I had started and restarted the book several times, going half way into the story each time before I hit a wall, writers block, and I couldn’t go on. I later found that my subconscious mind was in fear of completing the project because I felt my life (career) would be threatened if I published a book that my conventional colleagues would consider as heretical.

Once I found the subconscious program that was sabotaging writing, I “reprogrammed” my subconscious mind with the belief that it would be safe to write this the book and that the writing process itself would be fun, easy and fast. Within three months the book was in final form and on its way to press.

My partner Margaret and I programmed our subconscious minds so that we would, in fairytale fashion, “live happily ever after...on an eternal honeymoon.” Though it’s not yet “ever after,” we have been on a continuous honeymoon for twelve years and that’s just the beginning!

24 And if the positive thoughts don’t work with me, what does it mean? Am I “maladjusted”? A helpless mind?

As described above, there are two minds, the conscious mind and the subconscious mind. The conscious mind is the seat of your personal identity, desires, wishes and aspirations; it is the “thinking” rational mind. When you are generating “positive thoughts,” you are using the conscious mind.

The subconscious mind is a database of learned “habits,” which are downloaded with primary beliefs beginning midway through gestation and for the first six years of life. The subconscious mind is one million times more powerful in processing information than the conscious mind. Also the subconscious mind controls our behavior about 95% of the time.

If the beliefs in programmed subconscious mind do not support the desires of the positive thoughts...which mind will “win”? Do the math, the subconscious mind is 1,000,000X more powerful and operates 95% of the time. Positive thoughts will not work for most people because the beliefs programmed into their subconscious mind will limit or sabotage the goal of the conscious mind’s positive thoughts. Positive thinking really works when the desired objective is supported by both the intentions of the conscious mind and the programs in the subconscious mind.

If a person is unaware of the dual nature of their mind and the fact that the subconscious mind is more powerful, the failure to get results from positive thinking is often quite frustrating and sometimes psychologically damaging.

25 Could you give us some advice on how to control our health beyond our emotions and genes?

The most important advice I feel I can offer is to check-in with the beliefs that are held in your subconscious mind, for those behavioral programs shape your health and the character of your life. Since the most fundamental of those programs were downloaded into our subconscious mind before six, we really have no conscious awareness of the nature of many of these programs...many of which may be self-sabotaging or limiting and preventing us from experiencing the life we desire.

26 Are the schools teaching your discoveries?

Firstly, they are not really “my” discoveries! I am just one pioneer among many others who are revising the scientific principles we have grown up with. There are now many younger scientists that are forging a wider path into the realms of the “new biology.” Some of the new insights, especially regarding epigenetics are just now beginning to show up in regular schools. However, the information about energy vibrations and health, as well as the important role of the subconscious and conscious minds is not yet being offered to the public. Conventional textbooks are usually from 10 to 15 years behind the leading edge of science, so the schools do not yet have the new sciences incorporated in their curriculum.

27 What did you mean with this statement: a human organism is not a singular individual, it is in reality, a “community”?

When we look into a mirror we usually recognize the image as our self, a single living human entity. But this is a misperception, because in truth the cells are the living entities. An individual human is actually close-knit community of approximately 50 trillion cells. Every cell is intelligent and can survive outside of your body by living and growing in a tissue culture dish.

However, when in the body, each cell becomes an integral part of a community, working with the other cells that share the common vision of the community. The nervous system acts as a government that controls and coordinates the functions of the body’s cells. When the mind serves as a “good” government, the cellular community is in harmony and expresses health. If the mind is confused, angered, in fear or disturbed, it can destroy the harmony of the cellular community and lead to dis-ease or even death. Just remember, your thoughts are sent to the body’s cells via neuro-chemicals and nerve transmission. If you are harsh on yourself, it’s your cells that are the ones that physically

feel the brunt of your anger. Cells are generally very loyal, to the extent that if you so wish it, they will actually commit suicide (apoptosis in the cellular world). Positive and negative thoughts shape your biology, for your mind is actually “governing” 50 trillion cells.

28 In what ways is a human cell a unit of perception and what kinds of beliefs influence this model?

Cells are in fact, “miniature” people, for cells and humans have all the same systems (e.g., digestive, respiratory, reproductive, nervous and immune systems). Each cell, like every human, has receptors built into its skin so it can become aware of (perceive) the environment. Cells have receptor molecules built into their skin (cell membrane) that act in the same manner as receptors built into our skin—our eyes, ears, nose, taste and touch receptors.

Therefore cells live in their “world” in much the same manner as we live in our “world.” Cells have perceptions of their environment and are very aware as to what is going on in their massive, trillion-celled community. However, they receive broadcasts from the “government,” the mind, about the conditions of the world and the needs and demands upon the cellular community. Therefore if we have fears about life, then every one of our cells is reading our fear experience via the chemistry and electromagnetic vibrations sent throughout the body. When we are happy our cells are happy. Our beliefs are broadcast to, and shared with, all of our cellular citizens. In their own biochemistry, cells have chemical/vibrational experiences that we would sense as rage, anger, love, and bliss. Your cells experience the same life you experience!

29 Do our cells react to bad energies in a room, for example? Or to thoughts from another person?

Actually, our brain responds to the energy vibrations that constitute the field. The brain easily detects harmonious and disharmonious energies in the field...when it does, it sends out chemistry to control the body’s functions. We experience the chemical information sent to our cells by the brain as “good and bad vibes.” There are now many published scientific experiments that reveal people can be physiologically connected and respond to others via thoughts and meditation techniques. Quantum biophysics is the field of study that is providing a scientific foundation for the principles of energy medicine that have been used in Eastern medicine for thousands of years (e.g., acupuncture, feng shui and chi exercises).

30 Almost all of us have bad thoughts sometimes. Do you have them, too?

Not so much now! Ever since I started rewriting my subconscious programs, I have had a better life and that is directly associated with having better thoughts and beliefs. I know that “bad” things happen in this world, but I try not to dwell on them because I know that my beliefs and thoughts are actually influencing my life experiences. One of the important lessons of the new science is that we are continuously participating in the creation of our own life experiences. The joy for me is that upon exercising that understanding, I have created a most beautiful and lovely life experience for the last twenty years...and I don’t think that is an “accident.”

31 What are you researching now?

Currently, I am translating the awareness offered by the 50 trillion-celled communities (a human body) that have successfully been living on this planet for over a million years. Cells are miniature people and their social rules and customs can be directly applied to human civilization. My new book, *Spontaneous Evolution: Our Positive Future and a Way to Get There from Here*, co-authored with Steve Bhaerman, focuses upon the fact that our global crises are pushing human civilization to evolve...or go extinct. The book is based upon a study of how 50 trillion cellular citizens can work in harmony and health, and that all can experience a life of bliss.

32 How do you connect the Darwinian science with the destruction of our environment?

Could you explain it?

Darwinian science has two environmentally destructive components: 1) The belief that we arose from random mutations is a negative belief because it implies that there was no “reason” for the existence of any species, including ourselves. This kind of thinking separates us from all the other organisms in the biosphere. This belief is destructive because it separates us from Nature and in truth we are an integral part of Nature. We and every other organism were created to maintain an ecological balance in the environment...and in our ignorance we have actually been destroying the environment that provides for our existence.

Secondly, Darwinian theory has provided us with the perception that life is a continuous series of violent competitions for survival. With its apocalyptic vision, Darwinian theory has the world and its inhabitants in constant chaos and life-threatening competition. However, new insights now reveal that evolution is not based upon competition it is based upon cooperation. So we must let go of the Darwinian vision of struggle, for it conflicts with an evolution that emphasizes harmony and community. Global Humanity is a single organism comprised of billions of human “cells” trying to learn how to live in harmony before we all go extinct.

33 You say that we need to be able to guide our stem cells to renew our lives. And improve our lifespan to 120-140 years. Is it the dream of the fountain of youth? How can we do that?

Recent research on organisms exhibiting greater longevity than others in their species have revealed that almost all of these long-lived individuals had gene mutations that affected their insulin pathways and reduced their ability to digest food. When scientists did experiments in which regular animals were given subsistence-level diets (greatly reduced amount of food), they found that they could almost double the life span of every type of organism studied. These tests are now being applied to humans.

It appears that in digesting food, the process creates toxins (free-radicals) that poison our systems and shorten our lives. The interesting point is that when humans evolved there were no supermarkets, our ancestors did not have much food...and they were healthier for it. Today, in the face of technology and industrial farming we have the opportunity of over-eating and taxing our systems. Unfortunately, we have become “habituated” to eating too much, so that when portions are reduced, people psychologically feel they are not getting enough. We have to change our programming about food and then we will have the opportunity to double our life spans.

34 How long do you expect to live? What do you do in order to achieve that?
I have never really focused upon “how long” I will live. However, my research has emphasized that it would be better to pay attention to having the best life experiences I can while I am still alive. Live everyday to the fullest and there will be no regrets later!