

Scientists are looking into epigenetics, a promising new way to break free of our genetic heritage

# The DNA Overlay

By Monika Buerger, D.C.

It is often said that you are what you eat. That's true, to a point, but you are so much more than that! You are also what your mother ate, and possibly what your grandparents ate. You are your environment. You are how you were nurtured and loved, and you are where you live. You are the way you think. The you that you become is regulated by your epigenetics.

Science now tells us that epigenetics play a key role in everything about us, from the way that we handle stress, to the chronic illnesses we get, including diabetes and neurodevelopmental disorders. No longer can we conclude that we're trapped within the confines of our genetics. Through epigenetics, we have the ability to control or regulate how our genes express themselves.

## What Are Epigenetics?

The root *epi* means "on top of." Epigenetics are the biological mechanisms that lie overtop of our genomes. They are responsible for activating or deactivating different characteristics or expressions of our genes, without changing the actual DNA structure. In other words, they determine which genetic characteristics will—or won't—develop, and to what degree. Take, for example, a caterpillar that changes into a butterfly. It is still the same species, with the same DNA. The outward expression of that DNA, however, changes over time, undergoing a metamorphosis into a beautiful expression of life.

Epigenetics are known to be affected by exposure to toxins and synthetic compounds, environment, nutrients, behavior, and physical, chemical and emotional stress. The exposure triggers a chemical change in the body or brain, which leads to a release of a group of molecules, called methyl groups. The addition (or a loss) of a methyl group changes the direction of gene expression. It is thought that most of these changes, which set the stage for an adult's susceptibility to diseases and behavioral attitudes, occur either during embryonic and fetal development, or shortly after birth. These early epigenetic changes can lie dormant for years, and result in cancer or various other diseases later in life. Or, they can express themselves early in life as neurodevelopmental disorders.

## Good News, Bad News

Bad news first: Epigenetic changes can be passed from generation to generation. This could explain the ever-increasing rates of many disorders and diseases in the United States today. It is thought that in the U.S., one out of six children has some form of neurodevelopmental disorder or delay, such as a learning disorder, hyperactivity or spectrum autism. Diabetes rates are said to be climbing to 11.3 percent of American adults, or about 26 million Americans. If current trends continue, 15 percent of American adults will be living with diabetes by the end of 2015. Cancer, leukemia and other such diseases are also on the rise.

Now the good news: Scientists believe that the methylation process responsible for these epigenetic changes is reversible. Unlike a permanent defect in the gene itself, these epigenetic changes can be undone through various means, changing our gene expression—at least to a degree that will benefit our mental, physical and emotional health. Not only can we change our own gene expression, but we can start to turn the tide for future generations by not handing down our negative epigenetic changes.

The science of epigenetics is helping to bring together the beliefs of Western and holistic medicine. It is helping many to understand the mind, body and spirit of healing. In order to slow the increase in diseases and disorders, we must each look at different factors in our own lives. By taking responsibility for our own health and well-being, we can protect future generations, as well.

## Key Factors

**1. Environmental exposures** to toxins, chemicals, and pesticides are known agents of epigenetic changes leading to neurological disorders and chronic illnesses. In 2004, researchers analyzed umbilical cord blood samples from 10 neonates, all born in U.S. hospitals in August and September of that year. Of the more than 400 chemicals tested for, 287 were detected in umbilical cord blood. Of these chemicals, 180 are known to cause cancer in humans or animals, 217 are toxic to the brain or nervous system, and 208 cause birth defects or abnormal development in animals. The researchers believed that had they been able to

test for a broader array of chemicals, they would almost certainly have detected far more than 287. Scientists now refer to the presence of such toxins in the newborn as “body burden.”

**What to do?** Start by identifying and minimizing any potential exposures. This may be easier said than done, but do your best. Secondly, consult with a reputable healthcare practitioner, such as a naturopath, homeopath, chiropractor or medical doctor who understands and works with safe detoxification methods for you and your family. For those considering becoming pregnant, this is an important step to take prior to conception. However, never undergo a detoxification process during pregnancy.

**2. Diet and nutrition** are also big factors when it comes to epigenetics. In today’s world, this is one of the easiest factors to identify, yet one of the most difficult factors to change. Because of our fast-paced society, many of us rely on fast food, boxed food or canned foods as our primary source of fuel. Unfortunately, these foods are empty of the good nutrients that our bodies and cells need, and they often contain harmful additives or toxins.

**What to do?** Start by eating as many fresh or “live” organic foods as possible. (Live organic food is organic food in its natural state, without undergoing cooking, which can destroy some of the vitality of food.) Challenge yourself to take one day a week and eat nothing but live organic food for the entire day. Of course, if you have a family, the same rule applies. Then slowly start to introduce more fresh organic foods and meals throughout the week. If you are able, start growing your own fruits and vegetables, or join a local organic co-op. Supplement your diet with a good source of omega-3 fatty acids, Vitamin D and phytonutrients, and consult a healthcare practitioner who can help you and your family with other proper nutritional supplements. To understand what is in some of your food, go to [whatsonmyfood.org](http://whatsonmyfood.org) or [foodnews.org](http://foodnews.org).

**3. Stress to the body** can either be chemical, physical or emotional. Chemical stress is the result of environmental toxins, foods, alcohol, tobacco and drugs. All can occur during fetal development. Physical stress is generally the result of injury or trauma. These can either be macro injuries (such as a broken leg or sprained ankle) or micro/repetitive injuries (such as carpal tunnel syndrome). The physical stress a developing fetus is exposed to in utero and during the birthing process is often overlooked. The stress on a developing child’s spine and nervous system must always be taken into consideration. It is imperative that a mother’s pelvis be in optimal alignment to allow for proper fetal movement and positioning and to prevent the possible need for a cesarean

section delivery. Emotional stress can arise from many factors. For example, maternal care has long been known to affect behavioral outcomes of children. In one study using rats, it was found that rats not properly licked by their mother (a form of nurturing) produced more stress hormones as adults. As humans, we also all need emotional nurturing and healing.

**What to do?** Avoid chemical stressors to the body, especially prior to and during pregnancy. Exercise and avoid physical stressors within your control, and consult a family-wellness chiropractor to ensure proper spine and nervous system function. For those considering becoming pregnant, seek chiropractic care prior to and during pregnancy for optimal fetal development and have your newborn checked by a family wellness chiropractor. Finally, learn ways to deal with the “emotional backpack” we all carry around. When we carry our emotional wounds with us, it only weighs us down on our journey. Some suggestions to handle life’s stressors include yoga, meditation, Reiki and massage therapy.

#### Outlook Affects Outcome

A positive mental attitude goes a long way in changing the tide of epigenetic insults. The body and mind are twins, and should not be separated in regard to healing. To paraphrase Napoleon Hill, “What the mind can conceive, the body can achieve.” From a spiritual perspective, epigenetics supports the belief that disorders and diseases caused by the mind can be fixed by the mind. In other words, most of our thoughts and beliefs are stored in our subconscious mind.

We come preprogrammed into this world, with thoughts and beliefs of our parents, and their parents, and so on. From there, we are granted various societal thoughts and beliefs, many of which are negative and harmful to our body. However, if we can become conscious about our subconscious, we can feed our mind positive thoughts and images, and change our epigenetic destiny. No more can we use the excuse that our genetics determine our fate in life. It is all in our mind...and in our epigenetics! 🧠



*Monika Buerger, D.C., has been in full-time chiropractic practice since 1992, and has developed a highly successful and comprehensive treatment program for working with individuals diagnosed with neurodevelopmental disorders.*

*She teaches about neurodevelopmental disorders and functional neurology and is a contributing author to the textbook Pediatric Chiropractic. Her office is located in Ammon, Idaho; visit her online at [eaglecanyonwellness.com](http://eaglecanyonwellness.com). View article references and author information here: [pathwaystofamilywellness.org/references.html](http://pathwaystofamilywellness.org/references.html).*