

# THE 4 PILLARS OF EPIGENETIC

# CHANGE

### Evan DeMarco & Janna Breslin

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The Four Pillars of Epigenetic Change

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### Introduction

### 2010

My family's worst fear came true. Mom had been diagnosed with cancer. It was at the follow up appointment where the Doctor was going over the biopsy results, the treatment plan and what she could expect in the future. I was right there with her, not knowing what to do except hold her hand and try to breath with her. The whole appointment lasted 20-30 minutes. Such a perfunctory event for such a life changing set of circumstances. We got up to leave and that is when the Doctor spoke directly to me, "You're going to get this too at some point."

I was furious, scared and rattled to my core knowing that I was eventually going to fall victim to a disease that I had no control over. Genetic traits handed down from my parents, or grandparents or my great grandparents would eventually cause me to live a life of cancer, daily medication and possible premature death.

I was caught between trying to be a pillar of support for my Mom and wallowing in the diagnosis from the Doctor. In the course of a single sentence, I was told my genetics had condemned me to a life less healthy than what I had planned on for myself. – Janna Breslin

#### 1996

I was born long after my grandparents had retired. Their post-depression American Dream began by starting two businesses: a gas station and a painting company. My grandfather was a dying breed of people who worked hard without remorse or expectation, other than the hope of providing for his family.

The business of choice would dictate the final years of his life. My Grandparents, like so many others wanted to retire to the open road of the US with a new Caddy and a plan of seeing all the majestic beauty the United States held. Lead poisoning began taking its toll on my grandfather in his early 60's. Decades of working around lead paint and gas had poisoned his cells. By 70, he was suffering the ravaging effects of Parkinson's disease and Alzheimer's. He died at 82, never experiencing the open road with my grandfather, but confined to a nursing home for the last 4 years of his life as she was no longer able to take care of himself.

The Doctor's all but told me that Parkinson's disease was something I should look out for, as the gene for that disease could run in the family. I was 16 when I heard this, at a time when the medical communities understanding of genetics was medieval at best.

Like Janna, I was devasted to know that my body and brain might eventually succumb to the same horrific disease that left my grandfather bedridden and unaware of his family, simply because of the family I was born into. It was like getting a first-class cabin on the Titanic knowing full well that it was headed straight for the iceberg. - Evan DeMarco

The authors of this book, Janna Breslin and Evan DeMarco spent a considerable amount of time researching the evolving field of epigenetics. In doing so, we have had numerous conversations with some of the top medical doctors, researchers and brilliant minds in the field of epigenetics, a field that didn't exist even 20 years ago.

In all the research, in all the interviews, in all the time we have spent seeking the truth of our genes, we have come to one inescapable conclusion. We are NOT confined by our genes. We are not predestined to follow some genetic path laid down for us by ancestors we have never met. We are, in fact, more than capable of determining our own health outcomes.

Contained within the pages of this book are a few of the tools we uncovered in our research. It is our sincere hope that you find this helpful on your health journey, for if we learned anything along the way, it is that health is truly a journey. It is a constant daily effort to improve the human condition against the ravages of time and entropy.

We wish you the best of luck, and always, the very best of health.

If you've ever looked at a family member and thought, "I don't know where you get that from," you might be referring to an epigenetic change. Epigenetics is the name for the idea that a gene that is expressed—or shut off—thanks to external factors. In other words, the changes you go through from your environment, pollutants, diet and even trauma can affect your DNA without changing its sequence. It's even possible for you to pass these traits on to your own offspring.

Those of us who have gone through basic middle and high school science classes probably remember the basics of genetics. We've all made Punnett squares with snapdragon colors and learned how dominant and recessive genes work. However, epigenetics add a new layer of complexity to our previous understanding of DNA and inherited traits.



#### Chapter 1 | What is Epigenetics?



Epigenetics doesn't change the DNA that offspring might receive from their parents, but it does affect how those genes are expressed. Dr. Ian Cowell and the British Society for Cell Biology describe it by writing, "...while traditional genetics describes the way the DNA sequences in our genes are passed from one generation to the next, epigenetics describes passing on the way the genes are used."

The study of epigenetics sheds light on the age-old nature versus nurture difference and may even help us further our understanding of diseases like cancer. But first, you need to know what it is and how it works.

#### It's more than what's in your DNA

All our collected genetic material makes up the whole of our DNA, but not all the genes we carry are expressed at one time. There are external factors that can "switch" the genes on and off, which is linked to cellular development.

The process that blocks or allows a gene to be expressed is called methylation. Methylation occurs when enzymes in our cells try to attach carbon and hydrogen <u>"bundles</u>" to points in the DNA where our genes are expressed—and where proteins would attach. If the methyl groups block the proteins, the gene is "switched off." This can happen in utero or due to external conditions later in life.

To imagine how epigenetics might influence a person, think about identical twins. They share the same DNA, but if you raised them in drastically different conditions, epigenetics might influence which genes inside their cells are expressed. If scientists can unlock all the mysteries of epigenetics, we might be able to determine why some people get certain hereditary diseases while others do not.

#### History of epigenetics

Early epigenetic research is credited to several scientists in 1942, including Conrad H. Waddington and Ernst Hadorn, who studied developmental biology and genetics. Up until the 1990s, it was a lesser known field. It finally started garnering attention after Waddington published a study in

which he observed fruit flies undergoing environmental distress to cause genetic assimilation of expressed genes—that is, the parents developed characteristics due to stress and passed them on to their offspring, even if the offspring were not in the same stressful environment. This led scientists to believe that certain types of trauma could be inherited.

The study of DNA methylation has long been thought to be one of the causes of epigenetic expression, but researchers are also evaluating <u>chro-</u> matin remodeling, histone modifications, and non-coding RNA mechanisms.

In the last eight decades, our understanding of DNA, genetics and epigenetics has progressed by leaps and bounds. Today, scientists are studying epigenetics to see if there is a way to predict or change inherited diseases like cancer, immune disorders, neurological conditions and more.



Early studies showed that epigenetics may cause of a number of hereditary disease genes to switch on. One of the most famous early studies was done with children born during the mid-20th-century Dutch famine. Children who were born during that period had a much higher rate of obesity and heart disease, thanks to methylation shutting off a growth factor gene that performs similar to insulin. These children also had a significantly higher risk of schizophrenia when their mothers were exposed to famine

#### Nature versus nurture

conditions. Children who were born without the exposure to famine while in utero fared normally.

This is why researchers think that epigenetics is the key to the "nature" versus nurture" debate. They are finding even stronger evidence that a person's exposure to certain conditions—including stress, socioeconomic conditions and even social isolation—can trigger different genetic expressions, which can then be passed down to their offspring, even if the offspring never experience those same conditions. In short, epigenetic research suggests that you can inherit your parents' trauma—and its health consequences.

For example, a recent Queensland, Australia study explored the link between two specific stress genes and the ability to cope with or recover from post-traumatic stress disorder (PTSD). The study results suggest that epigenetic gene expression of these stress genes may be responsible for why some people are "naturally" more resilient than others and can recover from trauma more easily—the biological reasons for psychological processes.

#### **Epigenetic environmental factors**

#### Diet.

Consider the Dutch famine example: the children whose mothers were starving while pregnant likely adapted, genetically, to the conditions their mothers were experiencing. The mother and child may have adapted to the famine environment, but when those genes are passed on to children who can eat normally, they're susceptible to obesity and heart disease. This link has been observed in studies since.

#### **Environment**.

Your socioeconomic status has a massive impact on your genetic expression, since it encompasses a number of different variables. Diet, exercise, stress levels, isolation and mood are all factors that can change your gene expression to adapt to these circumstances—which is why some trauma can actually be inherited.

#### Parenting.

Your early childhood can expose you to <u>epigenetic changes</u>, too. Studies have shown that there may be an epigenetic link between neglect and abuse

#### The study of epigenetics may be the key to avoiding hereditary diseases

Studying epigenetics may eventually lead us to figuring out how to shut off negative gene expressions and switch on the positives—who wouldn't want to try to ward off disease, aging and mental health disorders? Currently, scientific research is focused on how epigenetics may lead us to treat or prevent diseases like cancer.

Cancer has been a subject for epigenetic research since 1983, and <u>re-</u> searchers have been able to develop epigenetic drugs, which are currently in use. One type helps activate tumor-suppressing genes, which can be affected when a person has cancer. The second prevents DNA methylation for genes that, when switched off, would allow for "unlimited cell proliferation."

Other current drug research includes the effects of epigenetics on asthma, Alzheimer's and other serious hereditary diseases—offering hope that we may find answers to prevent these conditions in the future, if not reverse their effects on current patients.

The next time you marvel at the way a family member seems to have inherited very different traits than you, you'll know that a different environment might be the reason for it.

and mental health disorders like anxiety and suicidal ideation.

### Chapter 2 | How Does Nature vs. **Nurture Work in Gene Expression?**

If you've ever had a debate about whether nature or nurture define our lives, wonder no more: it's both. Up until the 1940s, it was thought that our genes were defined and fixed at birth. The study of epigenetics, or how our genes can "switch on and off" throughout the course of our lifetime, has shown that our gene expression is changing throughout our lives—making us, quite literally, the products of our environment. As our genetic expression adjusts for diet, environment and social interaction, those changes can be passed to our own offspring, and in turn passed down to theirs... even if they never experience the same conditions we did.

To briefly recap Part One in this series, scientists who research epigenetics are studying gene expression. Although we have a great deal of genetic material in our DNA, not every gene is expressed. However, some genes can be activated or inhibited over the course of our lifetimes due to a process called methylation, something we touched on in Chapter 1. (This is one of several epigenetic processes, and the most widely researched.) These new gene expressions are due to environmental factors.

Theoretically, unlocking the epigenetic processes could make it possible to pick and choose gene expressions, but scientists today are currently focused on battling hereditary diseases like cancer, Alzheimer's and even inherited trauma.

#### How your experiences change your gene expression

Genetic expression was once thought to be fixed at birth, but epigenetic discoveries have demonstrated that this is not true. As a child develops in the womb and in their early childhood, different parts of their genetic material will be expressed, while others will remain "switched off," lurking in the background. As you know, genetics determine whether you have brown or blue eyes and other physical characteristics, but they also determine whether you get certain diseases and even how you process stress and trauma. This is why identical twins can have very different genetic expressions, even though they share the exact same DNA.

If you've heard people referring to "biological memory" or "cellular memory," they might be referring to this very concept. Our environments and experiences, especially traumatic ones, "are built into the architecture of the developing brain through the epigenome," according to the Harvard University Center on the Developing Child. The younger these experiences happen to you, the more likely your developing brain will adjust to compensate. Your new genetic expression may be temporary, or it may be permanent and passed on to your offspring.

However, just as trauma and negative socioeconomic environments can define us, so can love, good nutrition and positive, enriching experiences. These experiences may switch on positive gene expressions that promote good mental and physical health.

### Epigenetic studies on nature versus nurture

One widely-known epigenetic study studied rats whose mothers posed varying levels of grooming and attention to their offspring after birth. They noticed that the babies who were groomed more often tended to be better-adjusted and less anxiety-ridden over the course of their lives, while the neglected rats were far more anxious. Then the study switched things up: they wanted to know what would happen if the well-adjusted rats' babies were raised by neglectful mothers. It turns out that even with the genetic predisposition to be emotionally healthy and well-adjusted, the early neglect in those babies' lives caused an epigenetic shift. They became more anxious and passed those expressed genes to their children.

PBS' Kevin Davies gave <u>another example</u>: the musical ability of perfect pitch seems to be genetic, and researchers believe that it could be traced to one specific gene. That means that anyone with the "perfect pitch" gene has the potential for that gene expression. However, scientists found that children needed early musical training to activate it—an example of how a positive upbringing can change your genetic expression for the better.

Another recent long-term study followed the lives of children in England and Wales until they reached age 18, and found that there is a <u>direct link be-</u> tween poverty and negative epigenetic expressions. The children who were raised in "communities marked by more economic deprivation, physical dilapidation, social disconnection and danger," even adjusted for socioeconomic status, had significantly different genetic expressions than children raised in what we might think of as "normal" environments. Their exposure to more pollutants (including cigarette smoke), diet, abuse, neglect, danger and other conditions caused their bodies to adapt to these circumstances. Whether these genetic expressions will be passed on to their own children is not yet known, but it's strong evidence that nurture is every bit as important as nature.

#### Will you pass on all your experiences to your children?



The idea that you might be exposed to some sort of pollutant or stressful event and then pass it on to your kids is a frightening one, but you don't need to lock yourself in a bubble away from the world. Psychologist David S. Moore explains that this <u>"transgenerational transmission</u>" is (probably) relatively rare, and it's just as likely you may pass positive gene expressions on to your children. This area of research is too new to be able to definitively state what you might be passing on, how and why it happens.

Let us introduce you to Suzy and Lucy. Suzy and Lucy are identical twin girls. Not only do they look alike, they also have the same genetic makeup. Now sadly, Suzy and Lucy get separated shortly after birth. Suzy goes home with loving and doting parents while Lucy goes home with parents who are not winning any parental awards. Suzy's parents provide a loving home, nutritious food, exercise and support her education. Lucy's parents drink, smoke and eat more processed meat and cheese than any one person ever should. Lucy doesn't play sports and rarely gets any exercise unless it's going to the fridge to get her dad another Cold One. Her education is not a high priority.

25 years go by. Suzy is a doctor. Lucy works at a café, a job that she's had for 6 months which is a record for her. Suzy exercises daily, eats healthy

However, research shows that there is a link, as little understood as it may currently be. For the most part, the factors that cause genetic adaptations are usually major events, like being neglected or abused as a child, not getting appropriate nutrition over an extended period of time, going through a life-altering trauma or being exposed to pollutants on a long-term basis. In other words, you do not have to worry that the week your kids ate nothing but McDonald's because Grandma was in the hospital will screw up their genetic material forever.

Still, this can be an eye-opener for those who assumed that their good genes would carry the day, even if their or their children's life experiences have left something to be desired. The effects of poverty, neglect and abuse can cause epigenetic changes without anyone realizing it. Most parents understand that they have the power to negatively affect their child with their behavior, but to learn that it can be passed down through generations is a unique kind of burden. Realizing that nurture is indeed every bit as important as the expressed genes that you were born confers an increased responsibility to provide a safe, healthy environment for your children.

Ultimately, while there is still much to understand about epigenetics, it can serve as a reminder that our actions and experiences have far-reaching consequences, on a cellular level. On the other hand, it's a positive reminder that our bodies are adaptable vehicles that can adjust to help us survive. To better explain this, we need to look at the nature vs nurture argument on a micro level.

and rarely drinks except on social occasions. Lucy smokes two packs a day, ends each night with a bottle of red wine and never exercises. One day Suzy stops by the café that Lucy works at for a quick bite before heading back to the hospital. She sits down at the table, opens the menu, decides on the spinach and strawberry salad with balsamic vinegar on the side and a grilled chicken breast. The waitress comes over to take her order and that is when the two see each other for the first time since spending 9 months together in the womb.

While the story of Lucy and Suzy is fiction, there are several stories of true events unfolding like this. Not only do Suzy and Lucy no longer look alike, their genes no longer look similar. Lucy, by way of her lifestyle and upbringing, will have accelerated the aging process through DNA methylation. Suzy, by way of her lifestyle, will have lower stress chemicals in her body and most likely, have longer telomeres, something we will discuss in detail in this book. Two people with identical DNA, separated only by lifestyle can have drastically divergent DNA expression later in life. If Suzy and Lucy had gone home to the same parents, 25 years later their DNA expression would like more similar. What does the story of Suzy and Lucy tell us about the complex science of epigenetics and Nature vs Nurture?

Epigenetic changes can switch genes on or off and determine which proteins are transcribed. Things that positively impact genetic expression are nutrient dense diet, deep restful sleep, movement, meditation, gratitude, and supplementation to further optimize positive genetic expression. Things that negatively impact genetic expression are stress, inflammatory/nutrient poor diet, lack of sleep, drug and alcohol abuse, sedentary lifestyle, toxins, pollutants, negative mindsets etc.

As we told you in the introduction, and like everyone else in the world, we were dealt a genetic hand that we can't do anything about. Our parents, grandparents or great grandparents might have passed down a genetic trait that predisposes us to cancer, Alzheimer's or bed wetting. Those genes are simply on and off switches. Epigenetics says that we can ultimately determine whether that cancer or bed wetting gene gets turned on.

As two people who were sentenced to a less than desirable genetic fates, the emerging field of epigenetics gave us, as well as billions of others on the planet, hope that we could as the word "epi" implies, rise above our ge-

netics. In 2019, we began an endeavor to support the research that we had been doing on epigenetics. Complete Human was created based off the four pillars of epigenetic change. These guiding pillars are the key to bio optimization and positive change within your genetic makeup.

Ever hear the term Bio Hacker? Let's examine that and really try to un-

derstand what that means. Hacking, by its very definition is an attempt to get a system to do something it wasn't originally designed to do. Bio, from the Latin word meaning life would mean life doing something it wasn't supposed to do. Doesn't exactly scream "Come try me." We are not Bio Hackers. It was in looking at many of the practices of the "bio hacking" world that we uncovered the concept of bio optimization. Bio Optimization goes far beyond the vernacular. Its meaning is simple; to optimize the human condition, but its impact is far more reaching. We wanted to solve the problem of our genetics, and find out, if done properly, what really was the health potential of every human on the planet.

What follows is a small sample of the research that we have done in understanding how to ultimately change our epigenetic fate for the better. While many out there will try and sell you a magic pill, a daily tonic or some mastermind, the true path towards epigenetic change is rooted in hard work. Like Evan's grandfather, work ethic defines the success of our epigenetic outcomes. Or as the great philosopher once said – crap in, crap

out.

### **Chapter 3 | How Can Someone Impact Gene Expression Through Lifestyle?**

As we discussed in Chapter 1, scientists believed that our DNA and gene expression were fixed at birth. Today, the study of epigenetics is the fascinating proof that nurture is just as important as nature. That is, certain genes can be switched on or off depending on the life experiences you have.

For example, if you suffer through long periods of poor nutrition, your body may adjust its gene expression to cope with the situation. This can be a lifetime change. In fact, those gene expressions can be passed down to your children, even if they don't go through the same conditions that altered your gene expression. Epigenetics is the reason identical twins like Lucy and Suzy, can have the exact same DNA, but sometimes only one will get a hereditary disease.

This can be positive and negative. There's evidence to suggest a warm, healthy early home life can create beneficial gene expressions, just as poverty, neglect and abuse can trigger "negative" ones. Scientists studying epigenetics are eager to learn how this new understanding of DNA and genetics may help us create drugs to fight or even prevent various hereditary diseases. It has already been used to produce several successful cancer medications. While this is a relatively new field, and until we learn to modify genes through CRISPR editing, there is sufficient evidence that <u>your lifestyle can</u> and does impact your gene expression. Here's how.

#### You are what you eat

It goes without saying, although we'll say it anyway, that nutrition is one of the largest (or at least most well-researched) factors in our gene expressions.

From early on in the history of epigenetics, scientists have been interested in studying how access to food (and its nutritional quality) can affect the onset of hereditary diseases later in life. One of the earliest studies, which we touched on in Chapter 2, found that children who were born during the Dutch famine in the 1940s had a much higher rate of heart disease and obesity than children who had access to adequate nutrition. There are a myriad of modern studies that support the theory that nutrition plays one of the biggest roles in gene expression.



One recent study examined whether gestational diabetes can be prevented during pregnancy, which would reduce the chances of the mother and her child developing metabolic issues (including Type 2 diabetes) later in life. According to Scientific American, "The study is assessing whether a nutritional drink taken before conception and throughout pregnancy could help support healthy glucose metabolism in mothers... Maternal blood glucose levels may already be high long before gestational diabetes is diagnosed at around 28 weeks of pregnancy. ... Adjusting nutrition early in pregnancy—or even before conceiving—could potentially help stop or slow down that process."

In another study, researchers studied lactating mice, their newborns and

their liver function. They found that mice who received adequate nutrition over their lifetimes were able to suppress weight gain and later in life obesity, while those who were not exposed to enough of the milk lipids in their early life were prone to liver and metabolic issues.

Nutrition doesn't just affect your metabolism and heart, however—it may also be linked to depression, Alzheimer's and other conditions. In chapter 6, we discuss many of the different diet elements that we feel, based on the research, can improve epigenetic change.

#### Pollutants and drugs can shape your future

We all know that pollutants are bad for your health, but that smog you're breathing in (sorry, Los Angelenos) may actually be permanently altering your genetic expression. Similarly, exposure to chemicals and drugs also have an epigenetic effect. Air pollution causes everything from discomfort to early death, but <u>now we are learning</u> more about how the pollutants might trigger lung disease, inflammation and other health problems. According to an article in the Clinical Epigenetics Journal, "Emerging data indicate that air pollution exposure modulates the epigenetic mark...and that these changes might in turn influence inflammation, disease development, and exacerbation risk." There's currently no clear link between exposure in early life and more severe or lifelong diseases, however.



<u>Drugs and chemicals</u> also have an effect on your gene expression. For example, many older adults remember the days when thalidomide was given

to expectant mothers. Since the drug had no apparent side effects on adult humans, no one predicted that it would result in severe birth defects. Between 8,000 to 12,000 babies were born with birth defects as a result of the drug altering gene expression while in utero. Meanwhile, we all know polluted drinking water is bad, but epigenetics can explain some of the longterm genetic effects of <u>drinking water with arsenic</u>, for example.

You didn't need us to tell you that drugs are bad. That comes with a degree of common sense. But experimenting with drugs early on life, a time when most research says that people take illegal drugs, can alter genetic expression, and ultimately pass that expression on to future generations.

What about prescription drugs? Most prescription drugs go through multiple double-blind placebo controlled clinical trials to test for safety and efficacy. Most prescription drugs go through multiple double-blind placebo controlled clinical trials to test for safety and efficacy. Even with all of that testing, prescription drugs come with a laundry list of side effects. Every drug commercial now has to disclose those side effects, which can range anywhere from excessive flatulence to death. But when is the last time you heard "Will not alter gene expression for you or your progeny," on one of those commercials? To date, all of the safety studies do not account for long term epigenetic change. And with more and more drugs being introduced to the market every year, it's a safe bet that we will begin to see the ramifications of frequent prescription use down the road.





#### Physical exercise remains important

Physical exercise can change your gene expressions, too—and you can even have different expressions in different limbs. <u>Scientific American</u> describes the findings of a 2014 study: "scientists at the Karolinska Institute in Sweden asked 23 men and women to bicycle using only one leg for 45 minutes, four times a week over three months. In comparing muscle biopsies before and after the experiment, scientists found that, in the exercised muscle, new patterns had developed on genes associated with insulin response, inflammation and energy metabolism." That is, exercise helps shape your body, right down to your DNA.

While this might not seem like a particularly groundbreaking revelation, understanding why and how physical exercise (or lack thereof) can affect the body genetically—and whether that can be passed down to future generations.



## Trauma and early childhood experiences may create heritable traits

You don't have much control over your early childhood, but it is responsible for setting the stage for many of your psychological gene expressions. For example, <u>a study of Holocaust survivors and their descendants</u> found that they were much more likely to pass stress-related disorders down to their children and grandchildren. This sounds obvious—of course the children of traumatized parents will suffer the consequences, too—but the trauma actually changed their gene expression. In other words, "severe psychophysiological trauma can have intergenerational effects."

Similar research with <u>Pakistani orphans</u> yielded comparable results. However, some scientists caution that we should be cautious about seeing this as a black-and-white issue. Rather, "it would be 'premature' to conclude that trauma [can be passed on, and] hyped media coverage could...[suggest] that one generation's trauma permanently scars later generations."

Epigenetics has already helped scientists make strides in fighting diseases, but the sheer complexity of the human genome—and the field of epigenetics on top of that—means that we may be waiting a long time before we have many more clear answers. However, it's a sobering reminder that in some cases, our actions may have a ripple effect that lasts generations and a fascinating insight into how complex our bodies really are. Whether that's the impetus to reach for a healthier snack, move to a cleaner city or get out and exercise is up to you.

### Chapter 4 | What Epigenetics Can Mean for Our Long-Term Health

If you could find a way to shut down a hereditary disease before it manifests, wouldn't you? If we told you that your stress and anxiety could be passed down to your future children, would you make any adjustments? What if scientists weren't completely sure how it works and what triggers these changes—but they're certain that you can positively or negatively affect your long-term health?

These are the questions that the current research about epigenetics poses. We know that our lifestyles and experiences can change which gene expressions occur over the course of our lifetime and may be inherited by our children. The problem is, research still has a long way to go. How and why DNA methylation causes certain genes to switch on or off—and if there are easier ways to control it—is still up for debate.

In some areas, researchers have created cancer and Alzheimer's fighting drugs using epigenetic discoveries, while psychologists and psychiatrists are intrigued by how traumatic experiences can cause our bodies and minds to adapt. Above all, we know that diet, exercise, a good early family life and living in a safe, healthy environment are the best ways to ensure positive gene expressions. What happens if you don't have access to those, or your childhood was traumatic? Are you doomed to pass on "bad" genes and intergenerational trauma? Over the last three chapters, we've discussed what epigenetics is, how it affects our bodies and how we can pass down the sum of our experiences to future generations. In this chapter, we're looking at the practical aspects of epigenetics—what it means for our long-term health now, and what it could mean in the future.

### Changing gene expressions throughout our lifetimes

If we've done our job correctly as authors, you likely know the basics of epigenetics is the study of how external factors can affect whether certain genes are expressed or not. While genetic expression was once thought to be fixed at birth, scientists know now that DNA methylation, among other biological processes, can switch these genes on or off over our lifetimes. While it's still a relatively new field, the idea that our actions or environment can trigger genetic adaptations has far-reaching implications.

#### Your childhood experiences set a lifelong tone.

The experiences you have in your early childhood will set the tone for the rest of your life. According to this <u>scholarly article</u>, "Early life social experiences (e.g., early caregiving, trauma, maternal mental health) are known to contribute to individual differences in susceptibility and resilience for a range of physical and mental health outcomes." Doctors, scientists and the authors of this book have been telling everyone for years that our diet, exercise, stress levels and other external factors have a serious impact on our health, especially in the early years—and expectant mothers get a whole slew of similar advice, starting from the moment two lines appear on a pregnancy test. Now, thanks to epigenetics, we may know why (or at least part of why) that advice can be so important.

During the time a fetus develops and right after the baby is born, the brain is <u>"plastic,"</u> meaning that the child's brain is still evolving and adverse conditions can have a significant effect on them. Before the discovery of epigenetics, we might merely attribute that to psychological issues or brain chemistry. But epigenetics gives us insight into the biological processes behind the scenes. As we said, if a child experiences trauma, abuse or neglect early in life, they'll be more susceptible to mood and other health disorders later. The same goes for nutrition and exposure to toxic chemicals and pollutants, including drugs—those substances can interfere with DNA methylation and trigger gene expressions for hereditary diseases.

This is also seen in telomere length. Telomeres are the caps at the end of each strand of DNA that protect our chromosomes, like the plastic tips at the end of shoelaces—flugelbinders if you remember the movie "Cocktail,"

#### with Tom Cruise.

Without the coating, shoelaces become frayed until they can no longer do their job. Ever tried replacing shoelaces without the cap? Arghhhh! The same holds true for telomeres. When they become too short, DNA strands become damaged and our cells can't do their job. Telomere shortening is involved in all aspects of the aging process on a cellular level. Telomere length represents our biological age as opposed to our chronological age. There is an ongoing body of research that shows telomere length is important to the cellular aging process, and that epigenetics can play a pivotal role in maintaining telomere length, or shortening it.

"Current work suggests that so-called epigenetic mechanisms of gene regulation, which alter the activity of genes without changing the order of their DNA sequence, could explain how early life experiences can leave indelible chemical marks on the brain and influence both physical and mental health later in life even when the initial trigger is long gone," write Chris Murgatroyd and Dietmar Spengler of the Max Planck Institute of Psychiatry in Munich, Germany.

For example, your entire genome might have the potential for mood disorders and heart disease, but they might not have been expressed before birth. However, if you underwent a traumatic experience at an early age (losing a parent, for example, or not having access to adequate nutrition), your body might undergo a process that triggers the genes associated with those diseases or disorders—where they weren't expressed before, they might be after the trauma.

Early childhood is so crucial because an infant undergoes an incredible amount of development in the first few years alone, and their attachment to their mother is of paramount importance. However, epigenetic changes can affect you throughout your entire life.

#### How life treats you (and how you treat yourself) matters

Obviously, the greatest takeaway from epigenetics is that there are very real processes, on the cellular level, that can account for why we suddenly develop cancer at 62 or get heart disease when the rest of our family is robustly healthy. It's not always negative, however—perfect pitch is a genetic component that needs early musical training to manifest, and physical exercise can create positive or neutral epigenetic changes in the body. That is, your environment might shape you, but you should still make as many positive lifestyle choices as possible for your long-term health.

As scientists learn more about epigenetics and how external variables "imprint" themselves on us, many people are looking forward to the medical and psychological breakthroughs they hope will follow. Now that the Human Genome Project is finished, the Human Epigenome Project has <u>begun</u>—some people are hopeful that mapping the epigenome will lead us to figuring out exactly which lifestyle changes or medications will help us prevent certain diseases.

There are already epigenetic drugs on the market today, primarily for cancer and Alzheimer's. By encouraging or prohibiting DNA methylations, some drugs can specifically target the genes that are responsible for causing hereditary diseases to "switch on." For example, this article describes the process in which researchers developed (and continue to develop) drugs to prevent or treat colorectal cancer at different stages of the disease.

Before you declare that cancer has been cancelled, however, be aware that it's rarely so simple. In order to fight hereditary and malignant diseases like cancer, scientists have to understand the disease and the biological processes behind it on an enormously complex level. Clearly, there are already researchers who have helped develop drugs to just that—but extending it to every form of cancer, let alone other hereditary diseases, may take decades. In the meantime, you can use this information as confirmation that you should do what we've known we should be doing which is eat right, exercise, get out into nature and be kind to other people.

And now that we have given you the nuts and bolts of Epigenetics, let us dive into the 4 Pillars of Epigenetic Change.

### The future of epigenetic drugs

### **Chapter 5 | Mental Fortitude**

Congratulations—you've made it through the science! That implies a mental commitment or "fortitude," which leads us into this next chapter. Like all things, improving your epigenetics begins with choice. We want you to shout into the storm that you will not go gently into the good night, that you will rage against the DNA hand you were dealt, and with great conviction that you will triumph against the tyranny of bad genetic "hand me downs."



#### Bio optimization and epigenetic change begins with mental fortitude

Mind over matter. That's the secret to taking control of your epigenetic trajectory. The surest way to understand this is to go to a gym on Jan. 2nd when it is packed with everyone beginning their new year's resolutions then, go back on March 1st when all of those resolutions have failed, and the gym has returned to normal. Why do so many physical resolutions

#### fail? Mental fortitude. As Teddy Roosevelt once said:

### The 7 Habits of Highly Effective People

Of all the books we've read, classes we've attended and the topics we've researched in preparation for writing this book, the one that stands out amongst all others—and has for over 30 years—is The 7 Habits of Highly Effective People. If you haven't read the book, we highly recommend you pick it up. If you have read it... well, read it again!

It's not a book that you read cover to cover and then check off the list, but one that can be referred back to time and time again. One of the fun-

"It is not the critic who counts: not the man who points out how the strong man stumbles or where the doer of deeds could have done better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood, who strives valiantly, who errs and comes up short again and again, because there is no effort without error or shortcoming, but who knows the great enthusiasms, the great devotions, who spends himself for a worthy cause; who, at the best, knows, in the end, the triumph of high achievement, and who, at the worst, if he fails, at least he fails while daring greatly, so that his place shall never be with those cold and timid souls who knew neither victory nor defeat."

So many leave the arena before they understand that success is a journey, not a destination. And it isn't until we fix the mental blocks that hold us back that we can begin true transformation.

Can you cultivate and further develop your mental fortitude, optimism, gratitude, intelligence and resiliency? Absolutely! Like any muscle, it simply requires exercise and consistency. There are a thousand books, e-books, courses, classes and the dreadful mastermind that all claim to have the golden ticket on mental fortitude. Some call it mindset. Some call it mental resiliency. Some call it brain power. Call it what you will, the name is secondary to the process.

damental elements taken out of the book, and one that we feel supports the highest level of mental fortitude, is living a principal centered life. That sounds great in theory—but what does it actually mean?

Mental fortitude is the bedrock of the Bio-Optimized life. Life will toss you about. As of writing this section, we are in the third month of the COVID-19 Pandemic, hunkered down in Northern California instead of leading our retreat in Costa Rica. A strong mental fortitude anchored by principles and values gives us the strength to weather even a literal pandemic.



#### The principle-centered paradigm

We've read a lot of self-help books. A lot. Sadly, entire forests have gone extinct curating the paper to fill those books. Even more depressing is that those trees deserved a better end than the mindless tomfoolery littering the pages of most self-help books. In The 7 Habits of Highly Effective People, Dr. Covey drives the point home on what we feel is an afront to those sacrificed trees.

The majority tend to focus on what Dr. Covey calls the personality ethics: how one is perceived by others, their skills and their techniques, and how well they align with acting correctly. We call this ego ethic. In the world of Instagram and Facebook, this has become the prevailing decision-making paradigm. We only care about what the world perceives of us in the short glimpses they get while mindlessly and compulsively scrolling through their feeds. Our decisions and presentations to the world have been boiled down to likes and "engagement percentage."

Dr. Covey instead uses The 7 Habits of Highly Effective People to describe what he calls the "character ethic:" the idea that people are at their best and most successful at reaching their goals when they're being driven by a core set of principles, rather than by a list of DOs and DON'Ts, or by something ever worse like... well, likes. Principles are "guidelines for human conduct that are proven to have enduring, permanent value." These are core ideas, like integrity, growth, and excellence, compassion, all things we have seen time and time again lead to more fulfilling purpose in humans.



The Character Ethic taught that there are basic principles of effective living, and that people can only experience true success and enduring happiness as they learn and integrate these principles into their basic character. But, shortly after World War I, the basic view of success shifted away from the Character Ethic to what we might call the Personality Ethic. Success became more a function of personality, of public image, of attitudes and behaviors, skills and techniques, that lubricate the processes of human interaction.

This Personality Ethic essentially took two paths: one was human and public relations techniques, and the other was positive mental attitude (PMA). Some of this philosophy was expressed as 'your attitude determines your altitude, 'smiling wins more friends than frowning,' and 'whatever the mind of man can conceive and believe it can achieve."

Those who forget the past are condemned to repeat it. We've all heard that saying a time or two in our lives, but do we really understand? Look at how far we've come in even the last two decades. As people shift from the Character Ethic to the Personality Ethic, principles and values take a back seat to public image (how many likes did I get), skills and techniques (check out this cool new video of me doing something) and positive mental attitude (here's my meme of something positive, even though I'm feeling more alone and dead inside than ever).

Character Ethic, and the principle centered life create an anchor from which we are rooted and can grow to our fullest potential. The work found in The 7 Habits of Highly Effective People continues to drive the fundamental pillar of mental fortitude. Of course, there are many other great people who have contributed to the global conversation about principles, values and how we can cultivate the proper mental fortitude, but so much of it began with The 7 Habits of Highly Effective People.

#### Are you living the way you want to be?

Ask yourself this question: "If I lived the way I'm living my life now for the rest of my life, would I be happy? Proud? Fulfilled?"

Sit with that question for a minute or two. How does that make you feel? Are you happy with the trajectory of your existence or do you cringe thinking you might be scrolling through Netflix 20 years from now hoping to find someone or something else to entertain you?

One incontrovertible law of the universe is that wants are infinite and resources are finite. However, most truly content people don't search for meaning through an LCD screen on their wall. They're makers of their own destiny. They are the mentally tough, knowing that through adversity comes experience and opportunity. Mark twain once said:

> "20 years from now you'll be more disappointed by the things you didn't do than the ones you did. So throw off the bowlines. So, throw off the bowlines. Sail away from the safe harbor. Catch the trade winds in your sails. Explore. Dream. Discover."

That quote gets thrown around a lot as a calling card for those wanting a wanderlust lifestyle. But we postulate that Mr. Twain, like Dr. Covey, was a man of strong Mental Fortitude and was willing to work diligently for the ability to catch the trade winds. After all, with 28 novels and a smattering of short stories to his credit, it is not like he just hung out a Starbucks all day long jotting down cute things that people would quote 100 years later.

#### Create a personal development plan

The fundamental question of why we are here cannot be answer through blind faith, but by constant action in line with mission—a mission supported by our principles and values.

At Complete Human, we created a helpful and free Personal Development Plan that you can download from our site. In this plan we help walk you through how to develop your mission statement. What do you stand for? What is your purpose? How do you show in this world? When you die, what will people say about you? Then, we provide direction and space to help you identify your core values, contributions, past successes and goals. It all culminates in a personal mission statement—one you craft and live by.

Here's an example of the growth framework you'll find in the Complete Human Personal Development Plan:

### PERSONAL DEVELOPMENT PLAN **GROWTH FRAMEWORK**

#### Purpose

All things begin and end with purpose. What is your vision of the future? What is your mission? What is your Why?

#### Path Forward

How do create a mission and vision for your life and use that to chart a course for your life?

#### Personal Development

What tools do you need on your journey to become self actualized?.



#### Relationships

How do you show up in your relationships with others?



It's no secret physical and nutritional health are main pillars of epigenetic change. Most individuals believe they are healthiest if they focus on their physical and nutritional health above the other pillars. Some do not prioritize it at all. Physical health is hugely important and it's imperative to recognize it as an equal piece of the epigenetic change and the greater bio optimization equation.



#### Work

How does your work support your mission and vision of your life?

#### Freedom

How do acquire the freedom you desire while still building on your purpose?

### **Chapter 6 | Physical Health**

#### Balance is the key

Being well balanced in physical health may mean many different things to many different people, depending on your age and your goals:

- •For children, this might mean playing outside with friends and maybe a few pieces of broccoli with their mac and cheese.
- •For adults, this might mean incorporating at least 3 home cooked meals a week and limiting alcohol to once a week.
- •For someone who is battling disease or struggles with severe pain this might look like finding the energy to go on a 5 minute walk every morning.

Regardless of your age and goals, we at Complete Human agree that everyone should focus on a nutrient dense diet with real food and incorporate movement that focuses on scalable strength and flexibility.

There is so much information out there about the best diet to follow and exercise protocols. We believe that there is no one size fits all approach to diet or exercise. The goal here is to find what works with your lifestyle and what you feel best doing. The physical aspect of your life should be enjoyable, attainable and sustainable.

It's important to like what you are doing to stay compliant for you to reach your bio optimization goals. If it's a vegan diet, great. If it's powerlifting, awesome. The only caveat here is that whatever you choose, it should be sustainable and it should help you feel your individual best. What works for your best friend might make you feel horrible. We are all unique and require different modalities to feel our best. Find what fits you and your life properly for you to stay compliant and dedicated. Doing an activity you like sometimes is better than hating something you feel you should be doing or never do!

#### Don't neglect nutrition and explore metabolic flexibility

The same goes for nutrition. It's important to try options and stick to what you feel is best for you. There is no debating that focusing on real, natural foods in their simplest form is more beneficial than eating processed foods that have added ingredients you can't pronounce. Keep your body the welloiled machine it was made to be by providing it nutrients and vitamins in their natural form.

A massive part of optimizing the physical health pillar is understanding the importance of metabolic flexibility. What does it mean to be "metabolically flexible?" Someone who is metabolically flexible can have varied fat and carb intake each day and it does not derail them. There are benefits to be able to digest and metabolize carbs and fats whenever you eat them. Individuals on a strict high fat, low carb diet eventually have a harder time digesting carbs and the same goes for people on a strict low fat, high carb diet—eventually they will have a decreased ability to digest fats. Both carbs and fats are important for health and hormone function, so it is important

to be able to digest either of them well whenever you eat them.

Metabolic flexibility is the ability to seamlessly transition between fuel

sources or have the ability to "eat want you want when you want it" (within reason) and your body doesn't freak out. The best way to do this is match your carb in take with your exercise level. If you are an extreme athlete, your body will demand more carbs than someone who is mostly sedentary.

### Supplement what you're missing

Some individuals prefer to incorporate supplementation into their lifestyle. There is a debate out there that if you do eat real food and are getting a lot of your nutrients through food alone, do you really need to supplement on top of it? The founders of Complete Human agree that our food sources are not as nutrient dense as they used to be. Our soil is depleted, and we have sprayed chemicals and pesticides on most of the produce you buy at the store.

Even if you eat organic, we believe in covering bases and truly optimizing the human condition by incorporating supplements—especially with the increased amount of stress we have, toxins around us in the air we breathe, viruses, germs and lack of sleep. We can really use all the help we can get by keeping inflammation and toxin load low, while keeping nutrition and physical activity high, and supplementing with quality ingredients that benefit and support you on a cellular level.

Don't just start supplementing at random, though! We recommend getting a blood workup and talking with a physician about your various metabolic levels. It's easy to take a multivitamin and think you're covering your bases. You're not. Remember, your body is a finely-tuned machine, which means it deserves intricate adjustments. The only way you know if you've got low iron, a Vitamin D deficiency or issues with your folate levels is through diagnostic testing. Repeat after us: data-driven decision-making is key! Know what your body specifically needs before you start supplementing.

#### Pay attention to your vitals

At Complete Human, we agree that it would be tremendously beneficial for individuals to get annual (at least) or biannual blood work to check on their internal health. It is a misconception that if you do all the right things on the outside, you are automatically healthy on the inside. This couldn't be further from the truth. Some of the healthiest looking people on the outside are unhealthy on the inside and you would have no idea they could be battling something unless they have the bloodwork to show it.



At Complete Human, we agree that movement such as walking, flexibility, agility, power, strength, balance, and posture while also focusing on a nutrient dense diet, quality supplements, annual bloodwork, hydration, sleep, and getting fresh air is a great start to changing epigenetics on a physical level.

Again, consider this from a data-driven standpoint. How can you really tell if you're improving your physical wellness without benchmarks and data to prove it? Sure, there's anecdotal evidence—you feel better, your skin looks better, your endurance has improved, etc. But, as any good scientist will tell you, anecdotal evidence proves nothing—it only invites you to probe further for tangible results. You may not like the idea of a biannual doctor's appointment for bloodwork, but it'll give you the data you need to improve your physical health in meaningful ways.

#### **Rest, recovery and self-care**

We're living in an age of enlightenment when it comes to self-care. People are finally starting to wake up and realize that they only get one mind

and one body, and that it's important to protect, preserve and heal these things before irreparable damage is done. Take a nap. Soak your feet in an Epsom salt bath. Get a massage. These aren't luxuries—they're part of putting yourself on the right trajectory for epigenetic positivity.

The deadliest threat of our time isn't a pandemic or even global warming-it's stress. Stress kills in many different ways: heart disease, stroke, inflammatory diseases, suicide and countless others. To achieve true wellness, you need to eliminate stress and cope with what remains. Rest, recovery and self-care are the answer. Taking time out for yourself is hugely beneficial—from reducing chronic inflammation and cellular damage, to helping you get a good night's sleep for mental clarity.



Finally, consider the physical aspects of rest, recovery and self-care. If you're an athlete, you know you can't redline it every day and expect peak performance. There's a law of diminishing returns if you don't take out to care for yourself. Going hard every day without proper recovery will run you right into the ground! Your recovery process should be as intense as your workout—that is to say, intensely relaxing and restorative. Eat lean proteins, get proper rest, tend minor injuries and oxygenate your body. It all adds up to a restorative process of self-care that offsets the demands you put on your body.

### Physical health is what keeps your body capable

Scientists believe that the first person to live to 1000 years old has already been born. We agree with them! And while this person will almost certainly leverage miracles of modern science and medicine to reach the millennium mark, their body will likely sustain thanks to a tremendous focus on physical health and wellness. Who's to say you aren't that person?

Intense, targeted focus on physical wellness—including exercise, nutrition, supplements, medical care, rest and self-care—is the recipe for longevity and the key to positive epigenetic outcomes.



Many people go their whole lives without knowing who they really are. They see themselves as a collection of traits or define themselves by what they do, but they never achieve the enlightened plane of knowing who they are, truly. What makes you tick? What brings you lightness and happiness? What are your morals, values, personal creeds or governing beliefs? You're not a complete human until you understand yourself in relation to the universe around you.

![](_page_20_Picture_8.jpeg)

### **Chapter 7 | Spiritual Abundance**

The spiritual abundance pillar is where we get deeper into what it means to be soulful—or have a sense of self. This pillar includes creating and finding the true "you." Some examples of this include meditation, prayer, culture, expression of self, creativity, intimacy, sex, thoughts, emotions, positive home life, self-love, self-compassion, worthiness, visualization, breathing, gratitude, manifestation, exploration and more. It's all the things that make up who you are and how you self-identify.

![](_page_20_Picture_12.jpeg)

### How does spiritual abundance effect epigenetics?

We are soulful beings, naturally complex with personalities, character flaws, traumas, experiences, thoughts, feelings and ideas. It is vitally important to be able to express, find, and create ourselves while staying authentic and in our truest form of being.

When we are aligned energetically and spiritually, things seem to fall into place. When we are living our truest path, the universe presents people, opportunities and situations that solidify we are on that right path. When we heal from the negative experiences we have been through, we have a sense of freedom and relief. These energetic weights, barriers, and roadblocks are then lifted. Our soul and energetic self is more free and we can finally live in a place that is more authentically for us. It would be natural for us to feel happier, grounded and more at peace with ourselves and the world.

To some reading this, it might seem "woo-woo" or existential—but connecting more to yourself and to something bigger than you has substantial health benefits and also has (what we believe to be) extreme importance within the four pillars of epigenetic change.

#### The power of ritual and mindfulness

![](_page_21_Picture_6.jpeg)

We believe that developing a daily or ongoing spiritual practice is important to keep ourselves centered and grounded through life's inevitable stressors. When our body, mind, and soul are relaxed and in homeostasis, this is when healing and positive genetic outcomes happen.

This is uniquely different for each person, as we all have different thoughts, backgrounds, cultures, and upbringings. It is important to ask yourself the questions to better understand where you stand and how to keep yourself grounded throughout life. We have our opinions on what this looks like, and it's important to find what you can call yours.

Some people pray. Others meditate. Some do breathing exercises. These "rituals" are the path to mindfulness—a state of presence, in which your mind is free of clutter, focused and calm. Whatever your ritual looks like or entails, it's important to have one. There are mind and body benefits from both, which translate into epigenetic changes that translate into bio optimization. Prayer can uplift your mood. Meditation alleviates stress. Breathing exercises improve cellular oxygenation. Your state of mindfulness relaxes your body and allows you to transcend it, to a plane of conscious thought you might not otherwise reach with all the hustle and bustle of daily life.

Calm mind and tranquil body are the surface benefits of spiritual abundance. Probing deeper and attuning yourself to the universe, God or whatever higher power you resonate with bridges into even more benefits. Namely, manifestation of self.

Everyone is familiar with the age-old Gandhi quote, "be the change you want to see in the world." There's profound wisdom in this (which is why it's repeated so often). But, to manifest change, you need to be attuned to your beliefs, morals, principles and the other governing aspects of your being. It takes deep introspection and reflection. Spiritual abundance is what's required to self-actualize, and to further bring about the changes you want to see in the world.

Here's a simple example. Imagine reading a news headline about rising poverty rates in your city. You close your eyes to meditate, pray or relax, reflecting on your feelings about this news. You're hurt. Concerned. Saddened. You have an overwhelming desire to do something, but you have no idea where to start or how to make meaningful change. So, you reflect.

### What you think about, you bring about

What would you do? How would you do it? Remove the obstacles and get to the root. What do your principles tell you to do? When you open your eyes, you'll have digested this information and given yourself a path to walk. You might donate to a homeless shelter or volunteer your time. You might lend a hand to someone in need. You might even run for public office on a platform of compassionate humility! It all depends on your introspection.

Too many people today process and compartmentalize. Spiritual actualization asks you to reflect and face the things you might otherwise process away. And, in facing these things, you open yourself to spiritual awakening. Whether it's closeness to God, appreciation for nature or a stronger connection to the ideals that govern you, it's a necessary part of becoming a complete human.

### Spiritualism is constructive, not destructive

There's a difference between spiritual idealism and spiritual objectivity. In simpler terms: don't get caught up in the idea of what it means to be spiritual—rather, see spirituality as the path to being a more complete version of yourself. Too many people begin to define themselves and their actions through the lens of certain spiritual ideologies, but that can have negative consequences.

Your spiritualism should be constructive, no destructive. Additive, not subtractive. It should help you determine who you are and what you're all about, and it should govern the actions you take and the path you talk down. But notice—all of this is specific to you. You don't need to ascribe to someone else's ideas of spiritual abundance and you shouldn't try to shape anyone else's perception of what it means to be spiritually complete. When spiritualism becomes a tool, it stops being a means to betterment.

As you search for deeper meaning and actualization within yourself and in the universe around you, remember that spiritual abundance is something that's unseen. It's in your heart, your mind and, eventually, connected to every fiber of your being. It needs to be a constructive force for personal betterment—not a destructive force that you use to compare yourself to others or denigrate them with.

### **Recognize the need for spiritualism**

When you find you are on the path that was meant for you, things fall into place easier. The right opportunities present themselves to you. The people you meet are there for a reason. It all congeals into the life you were meant to live.

Some people call this divinity. Others call it synergy. It goes by names

like karma and energy. Whatever you call it and however you view it, recognize that it's an important building block in your epigenetic quest. Your manifestation of self only comes through self-actualizing, and part of that self-actualizing is about recognizing who you are, what you stand for, what you believe in and how it all ties you to the universe around you.

### **Chapter 8 | Planetary Connection**

![](_page_23_Picture_2.jpeg)

Isolation and loneliness can be more detrimental to one's health and psyche over many things. At Complete Human, we believe planetary and social connection—doing good for the world—can be one of the most healing things someone can do. Connecting with others, paying it forward, giving back, social responsibility, travel, exploration, social life, meeting people, romantic partners, helping others, donating, eco friendliness, and making time for others outside of your individual social circle all support planetary connection.

You've likely heard the phrase "no man is an island." This isn't just a wise adage—it's part of the secret to living a happy, fulfilled, healthy life. Social interaction and a deep connection to the world around you can influence epigenetic positives that have profound, lingering effects on your state of being.

Planetary connection is also a pillar that's unique for each individual. How you connect with the world to fulfill your purpose on this planet is another form of expression and living for others, not just ourselves. Keeping our hearts full and light by giving back not only helps us, it brings us outside of ourselves enough to help someone else.

### A picture of utopia

Imagine a world where everyone did something helpful for someone else every day. We would undeniably notice an energetic shift in the world, and we can guess it would be a pretty positive one. People would be happier. Simple acts of kindness would inspire positivity throughout. You might even go so far as to say we'd end things like war, hunger or discrimination—all thanks to simple acts of kindness.

The reality is, simple acts of kindness add up and they help us develop empathy. Empathy fuels our connection to others. When we understand them, see them as people and genuinely care about their wellbeing, we tend to act more... well, human. Seeing people as people is what leads to utopia. One man will have a hard time committing violence against another who he sees as his brother. One woman will act with compassion to a stranger, because she sees that stranger as her sister. Empathy is what drives us to develop connections—even if we don't directly benefit from them.

### Empathy and connectedness aren't weaknesses

In the 1960s and 70s, people protesting the Vietnam war earned the name "hippies." These people preached love and togetherness. They were attuned to nature. They stood for civil rights and moral awareness. What's ironic is that "hippie" was used as a derogatory term—something to dismiss these people, who had their heads stuck in the clouds.

But think about the hippies. What was so wrong with wanting an end to war? What's bad about showing love and compassion to other people?

Why is it wrong to want civil rights for everyone? It's easy to laugh at the hippies, but they're the best example we have of planetary connectedness. They formed social connections, pushed for empathy is society and prioritized naturalism instead of materialism.

Flash forward to today. The spirit of the hippies lives on, and elements of this powerful movement are present in many cultures in our society. But there's still more to do. More people need to awaken their sense of planetary connectedness and realize that we're all in this together.

At the risk of sounding like hippies, Complete Human believes in the concept of one people, one planet and one mission. We're all here on this big blue marble together. No man is an island.

#### Blue Zones are proof of concept

How can getting in touch with the world around you fuel longevity and epigenetic positives as you seek to bio optimize? Readers only need to look at the world's Blue Zones!

Blue Zones are another example of how planetary connection is expressed through epigenetic markers. These are areas of the world defined by Dan Buettner, American National Geographic Fellow and New York Times-bestselling author, as "regions of the world where people live much longer than average." There are five original Blue Zones: Okinawa (Japan); Sardinia (Italy); Nicoya (Costa Rica); Icaria (Greece); and Loma Linda, California (USA).

![](_page_24_Picture_7.jpeg)

Along with diet, individuals in Blue Zones report a sense of belonging and purpose, putting others first, and having healthy social circles. These aren't just geographic areas of the world where people thrive—they're communities where social-emotional connections are a major priority. People in Blue Zones have a sense of general goodwill and humanity (empathy) and take it upon themselves to function as part of their society.

Blue Zones show us that the connections we have to the people around us and the world we live in have tremendous influence on how our genes express themselves. It's why people in Blue Zones are some of the happiest, healthiest, longest-living individuals in the world!

### What does it mean to be connected?

While we've already established empathy as the cornerstone for social connection, it's also important to recognize the other hallmarks of planetary connection. Feelings like a sense of altruism, for example. Or, a sense of duty and service to think beyond yourself.

You don't need to live in a Blue Zone to experience the benefits of planetary connectedness—you simply need to manifest a real, personal connection to the world around you. Strike up a conversation with your local barista. Pick up litter while you walk through the park. Do a kind thing for someone without them knowing. These things and multitudes of others like them are part of forming meaningful connections with your surroundings.

Do you feel like you belong in your community? Do you care about your friends and neighbors? Do you feel comfortable and welcome where you live? Do you want to take care of and beautify your surroundings? To be connected is to care; to care is to be connected.

### Make the world a better place

Living a long and vibrant life is directly related to who we have around us and what we do with that precious time with them. What can you do to positively connect with our world and people in it? How do you give back? How do you make the world a better place? Whether it's grand gestures or little things, how we interact with our surroundings is what determines not only our legacy, but our sense of self.

As sociologists have studied and Blue Zones go a long way toward proving, meaningful connection to the world has a profound effect on how we adapt to it. And, as we've learned throughout this book, gene expression is influenced by our surroundings and the experiences we have with them. To have any control over epigenetics and to seek the highest positive outcomes, individuals need to make meaningful contributions to the planet—socially, environmentally and at a personal level.

In this book, we've shown that you can take control and benefit your health no matter your family history or the genes you hold. Use this as a reminder and resource for yourself and others to help educate them that they are not predestined for doom and ill health.

By using these pillars, we believe someone can make radical change on every level of their life through mental fortitude, physical health, spiritual abundance, and planetary connection. Like a table, each one helps support the other and only when all legs are balanced is the table its most resilient. YOU can control each leg of your own table and it all starts by choice and by dedication.

Genetics and epigenetics are fascinating scientific topics and the first step is to recognize that you have the power to control and shape your future of health and abundance. From the most internal layer of "you" out to your planetary connection, every single aspect is equally important.

Complete Human believes in the importance of doing our part as individuals and as a whole to make the world a better place. This looks different for all of us. Collectively our guiding principles are to help educate the world and provide clean supplements to every individuals life. Of course, supplements are not the answer to health. The more supplements you take does not equate to better health. It takes a combination of the pillars.

If someone chooses to optimize their health through supplementation, we like to help them do it right by giving back to the world using sustainable and quality ingredients, sourced from communities across the globe that would benefit from our support. Our organic coffee products farmed from women farmers in Guatemala. Our sustainably caught small ancho-

### Conclusion

vies and sardines make up our heavy metal free fish oil. We choose to put the best in our bodies, while sourcing from others that help make the world a better place.

It all adds up to a continuum that drives the Complete Human mantra: "embrace the uniqueness of all people on this planet, while shining a light on the major issues of our time."

The Four Pillars of Epigenetic Change