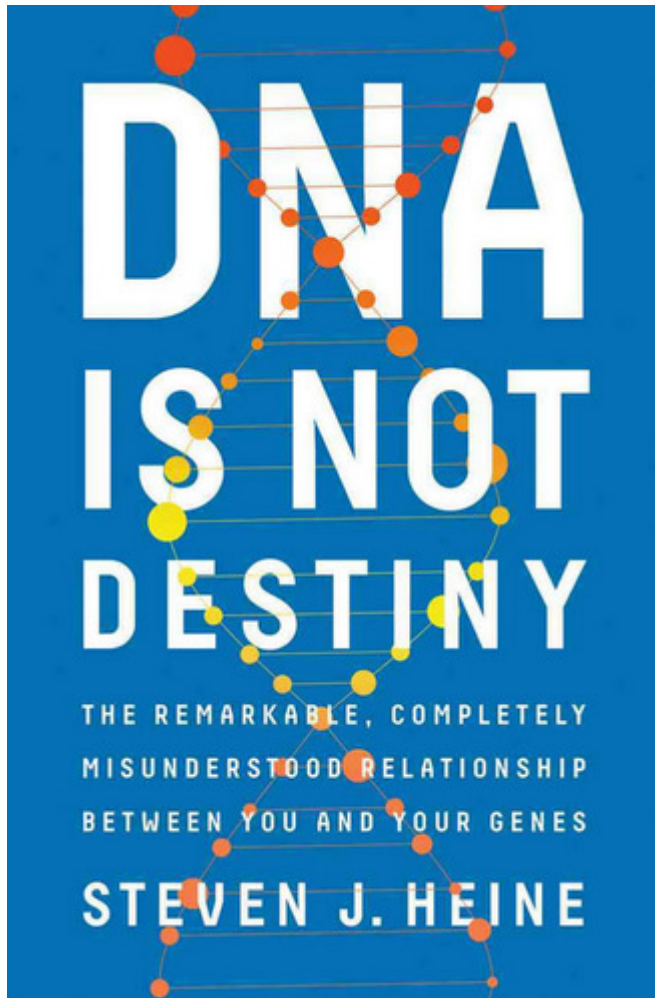


‘DNA’ offers intriguing look at issue

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“DNA Is Not Destiny: The Remarkable, Completely Misunderstood Relationship Between You and Your Genes” by Steven J. Heine. New York: W.W. Norton & Co., 2017, 336 pages, \$35.95.



“In the second week of April 2003, our world changed forever: We sequenced the first complete human genome,” Steven J. Heine explains near the beginning of “DNA Is Not Destiny: The Remarkable, Completely Misunderstood Relationship Between You and Your Genes,” his new attempt to more realistically define the intricate interplay between heredity and human existence. “We now have access to information about ourselves that no previous generation has ever had: We can peer directly into our own genetic makeup. We each have a unique string of nucleotides in our cells that contributes to who we are, and since that fateful week in 2003, we are able to unravel this string and read it. It’s a 3-billion-letter autobiographical code that seemingly flows straight from the pen of God.”

“DNA Is Not Destiny” is extensively researched, with 60 pages of source notes at the conclusion of the nine chapters comprising the main text. And although Heine is an academic of the first order, he seems to be one of those gifted writers who is able to communicate relatively advanced ideas and concepts to a general audience. Only rarely did I have to Google some of the terminology to get a more

coherent sense of exactly what he was trying to convey. For example, in describing an attempt by one of his colleagues to explain how Elvis Presley died: “The purported smoking gun was found at the precise genetic address RSID 193922380, which is located on the MYBPC3 gene that sits on chromosome 11. At this location, the sample possessed a G nucleotide (in contrast to a C, like most people have) ... (but) having a G nucleotide at RSID 193922380 has not at all been shown to be a strong predictor of familial hypertrophic cardiomyopathy.”

Heine’s primary motivation for writing the book seems to be to bring some much-needed sanity to the unbridled optimism that has captured the public’s imagination over the last 14 years. Whereas sequencing the human genome is indeed a monumental accomplishment, perhaps even rivaling the moon landing, Heine argues many of the claims made about this knowledge somehow being the key to unlocking virtually every medical mystery to ever confront physicians, researchers and health care providers in general have been grossly exaggerated. Currently, just over a quarter of a million

people have had their genomes sequenced. But in case you haven't noticed, having your genetic code analyzed is becoming rather chic. For a reasonably inexpensive processing fee – and the price continues to drop daily – you can send in a sample of your saliva and find out all kinds of interesting tidbits about where your ancestors lived and to what extent you can claim a particular cultural, racial or ethnic heritage. In fact, it is estimated that by 2025, more than a billion inhabitants of the planet will know their genetic makeup.

The problem is not the results, Heine asserts, but rather how those results are interpreted. Increasingly, the media portrays genes as though they are unilaterally responsible for the expression of a given trait or hereditary propensity. The public is bombarded, often on a daily basis, by overly simplistic claims that researchers have uncovered the cancer gene, the addiction gene, the IQ gene or, more recently, the divorce gene. Again, the assumption is these complex conditions and related phenomena are controlled by a particular strand of DNA that, once identified and isolated, can be manipulated, giving the individual the ability to almost miraculously overcome their circumstances; i.e., where once their fate was sealed, now we have the capacity to alter their life trajectory.

Unfortunately, as the author convincingly emphasizes, the reality is a lot more complicated. What is missing from the equation are the undeniable and omnipresent interactive effects that invariably define and channel how genes are expressed – turned on and off, and to what extent. If the genetic process was as straightforward as it is often characterized, we should have seen significantly more progress in curing many of the ills that seem to have plagued humanity since antiquity. For more on this, you might want to check out “The Emperor of All Maladies: A Biography of Cancer” by Siddhartha Mukherjee. His warning about the unwarranted confidence embodied in the proverbial “war on cancer” perfectly mirrors and complements Heine’s perspective on the unrealistic prognosis many researchers have prescribed to unraveling the human genome. Once again, the hype is not backed by the science.

Consider the following from “A Brave New World: Engineering Better Essences,” the eighth chapter and one of my personal favorites. Here Heine articulates the thesis that animates much of the discourse woven throughout the fabric of this enlightening and eye-opening volume: “We are prone to conceive that all human traits, like intelligence, physical attractiveness or height, are aspects of our essence, and that they each have their corresponding switch-like genes. This makes it very easy to imagine that all of the traits of an individual can be toggled on or off with the appropriate genetic engineering. And this idea that the richness of our humanity could be reduced to something akin to an online shopping experience remains both tantalizing and terrifying. But because most traits don't emerge through any simple switches, most of our imagined futures of genetic engineering will remain just that: imaginary. If most complex traits are best understood through web-thinking, then we need to return to the question posed at the beginning of this journey: How should we be thinking about the role of genes in our lives?”

Heine is a distinguished university scholar and a professor of social and cultural psychology at the University of British Columbia. He has published more than 70 articles in periodicals such as *Science*, *Nature*, *Behavioral and Brain Sciences* and *Psychological Review*. The third edition of his textbook, *Cultural Psychology*, was released in 2015.

I found “DNA Is Not Destiny” to be exceptionally intriguing and relevant, especially given the almost infinite potential ascribed to genetic manipulation in recent years. I recommend this one highly.

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