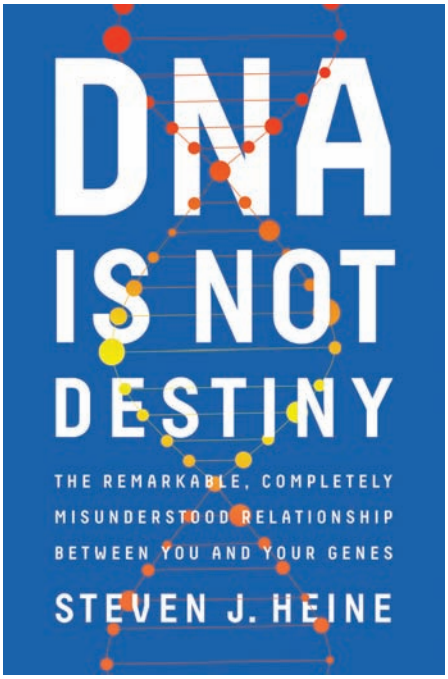

GENETICS

DNA is not Destiny: The Remarkable, Completely Misunderstood Relationship Between You and Your Genes. By Steven J. Heine. 2017. W.W. Norton and Company. (ISBN: 9780393244083). 267 pp. Hardcover. $26.95.

This book by Steven Heine, a leader in the field of cultural psychology, explores the relationship humans have between our genes and our behaviors surrounding our genes. It is a clear look at how we view our genes and how that differs from what we can actually learn from them. The premise of the book is that humans are "essentialists": we believe that "things are as they are because of their underlying essences"; essences are natural, internal, and immutable forces with clear boundaries that create the world around us. We can see this thinking in idioms such as "You are what you eat" as well as in fad diets where it is suggested that the reader follow a diet based on his/her blood type. Humans tend to think of genes in a manner that turns them into the ultimate essence: we believe them to be internal natural, immutable, and they define the boundaries of who we are. Additionally, Heine posits that most people tend to think of genes as "switches" that are either on or off: you either "have" the "cheating gene" or you do not, a viewpoint exacerbated by the manner in which genetic breakthroughs are reported in our sound-bite culture.

Of course, being biology teachers, we understand that this simplistic view of genes is almost never correct, but we all have likely experienced our students' thought processes as they attempt to understand genetics, and those processes almost certainly follow this switch-thinking and essentialist bias. In fact, it's possible that you have even contributed to this ideology yourself if you have been tasked with teaching young students about genetics. How many of us have used eye color as an example of a dominant or recessive trait, even as we know that eye color is not so simplistic?

After providing an overview of how genes work and explaining how humans tend to view the world of genetics, the author then describes his own experiences with the popular DNA testing company, 23andMe (among others). He describes his emotions as he learned that he has "'the genes for' psoriasis, prostate cancer, chronic kidney disease, melanoma, Parkinson's disease", and high blood pressure, as well as several other diseases. He explains how he understands that genes are incredibly complex and interact with both the environment and the internal cellular machinery, and yet he still fell prey to these essentialism thoughts. As I read this book, I experienced some trepidation, as I had just sent off my saliva to 23andMe days before receiving this book to review. I wondered what I would discover about myself and if I would fall victim to the essentialism mindset which can cause one to alter their behavior based upon learning their genetic risks for various afflictions. I am happy to say that based on the current tests run by 23andMe (they have modified what they look for as time has progressed and they have received both feedback and litigation based on their test results) that I am primarily genetically healthy. I did discover that I have the "obesity gene", meaning that I am likely to weigh 20% more than the average woman of my height. However, rather than run for the nearest cheeseburger, which essentialism thinking suggests that I would do since essentialism states that my genes determine my fate, I simply nodded, as I have always been aware of my tendency to gain weight easily. In fact, I weigh less than the average woman of my height, likely precisely because I had some idea that genetics were influencing my weight.

In addition to discussing the health implications of genes and genetic testing along with humans' essentialist biases, Heine also discusses topics such as gender and sexual orientation, race, and even eugenics. He provides a glimpse into the future and whether we might be able to achieve GATTACA level selection (spoiler: we cannot, due to the incredibly complex interactions of genes), and finally provides some sensible guidelines for beginning the process of changing our thinking about genes. As genetics research continues to illuminate our hidden secrets, it is imperative that we, as biology teachers, lead the way in correct thought about genes and their effects. I suggest that all biology teachers read this book, especially those teachers tasked with teaching introductory genetics. I found this book to be a fascinating insight into the psychology behind how we think about genes, and it helped illuminate some of the responses to teaching genetics that I have encountered over the years.

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