



## What DNA ancestry testing can and cannot tell us

**Sheldon Krimksy: Understanding DNA ancestry. Cambridge: Cambridge University Press, 2021, 168 pp, £11.99 PB**

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*Understanding DNA Ancestry* is a short book, which is part of Cambridge University Press's *Understanding Life* series. Other books in this series are *Understanding Evolution*, *Coronavirus*, *Development*, *Evo-Devo* and *Genes*. Compared to these titles, the subject of this book—genetic ancestry tests, their history and technology, and what they can and cannot convey—may seem rather niche. As a bioethicist and amateur philosopher of biology who has read quite a few popular science books on genes and genetic testing, I had expected this book to be of a similar nature: a concise overview of the technology and then some ethics thrown in towards the end of the book. To some extent, the book does precisely that. However, while reading, I was pleasantly surprised, and even mesmerized, by the way the author presented the different aspects of DNA ancestry testing. Ethical and even fundamental philosophical questions are interwoven from the start, and the technical aspects needed to convey the message are repeated at several key points, leading to an invigorating reading experience. Let us first take a closer look at the book and its author.

Sheldon Krimksy, a philosopher and physicist, was a professor of Urban and Environmental Policy and Planning at Tufts University. He was also a fellow of the Hastings Center, a bioethics institute. His key interests were the regulation of science and technology and the social and ethical aspects of science and technology. He was a prolific author: He wrote at least 17 books on topics such as genetic privacy, commercialization, the concept of risk, GMOs and environmental issues. He passed away on April 23, 2022, at 80. *Understanding DNA Ancestry* is his latest book, in which many of the topics he studied are integrated and illustrated using the example of DNA ancestry. It is a small and short book, 152 pages, comprising 13 brief chapters.

The introduction sets the scene in terms of the author's interest in the topic, which arose organically from his research into forensic uses of DNA, and the book's aims. The paragraph on varieties of ancestry already hints at some of the

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most challenging aspects of using genetic ancestry tests. First, the author clarifies that genealogical, cultural, and genetic ancestry are different categories and that even biological kinship should not be equated with genes. Second, the concept of genetic ancestry that DNA companies use is the genetic similarity between individuals and populations, a point that he will repeatedly stress in the later chapters. As a reader interested in conceptual questions surrounding biology, I take from this that the idea that genetic ancestry tests will yield the final biological truth about ancestry or even race is misguided. There are many other topics that invoke genes as magic wands to illustrate an underlying reality more real than cultural or social realities, such as paternity or species membership. Also conflating genetic ancestry with ‘real’ ancestry conveys a reductionist view of reality. I agree with the author that genes mean *something*, just not everything. I can only applaud how the author delivers this message throughout this book, sometimes explicitly and sometimes hidden in how the technical details are meticulously explained. The second chapter, *The Business of DNA Ancestry*, describes the history of direct-to-consumer ancestry DNA testing. By positioning this chapter early in the book, the idea that ancestry testing is primarily a commercial enterprise is anchored in the reader’s mind. Moreover, one of the ethical issues related to this business is made clear: the donated samples are not solely used for the ancestry testing itself but are used for the development of other kinds of genetic tests, such as health-related ones, or shared with third parties that want to develop such tests. Already in Chapter Two, the plot thickens.

In the following chapters, the author explains the technical aspects of ancestry testing, but always with reference to conceptual and ethical issues. Chapter Three explains how genetic variations could be linked to the geography and movements of early human populations. It offers an exciting picture of human evolution, while simultaneously challenging the idea of human diversity between populations, by referring to Richard Lewontin’s seminal paper from 1972. Human diversity between individuals, so this paper states, is more significant than differences among groups. Although the book also discusses critiques of Lewontin’s ideas, it still serves as a warning that equating ancestry, and even race, with genes is problematic. The limits of what genes can tell us become further apparent in the chapters on science and technology. The discussion on how ancestry markers grew organically from those used in forensic settings was especially illuminating. Indeed, in a later chapter, we come full circle: genetic ancestry testing can be used in forensic settings to determine the kinship between two individuals or the ‘ethnicity’ of a suspect based on the DNA found. Needless to say, this opens a whole new can of worms of ethical and legal issues. Chapters Ten to Twelve are then dedicated to ethical, social and legal issues, including ownership of genetic information, privacy issues, forensic applications, and the concept of “race”. I found the way the author deals with the latter question especially illuminating and provocative. Indeed, rather than presenting this and other issues as ‘add-ons’ to the earlier, more technical and other issues, they flow organically from the technical discussion. By the time we reach the discussion about the flaws of essentialist conceptions of race and the potential dangers of looking at race as something that can be defined through genes, we understand why this is not merely a philosophical discussion between genetic essentialists and

constructivists. The author weaves ethics and technology together from the start in a nuanced and balanced way, which is quite a feat.

The book is interesting for philosophers of science and ethicists, but also for geneticists and the general public who want to know more about the practice of ancestry testing and what they can learn from such tests. I would also recommend it to anyone interested in questions surrounding race and its relation to biology. Some chapters are somewhat technical and may be challenging for those not seeking that level of technical detail. However, the many illustrations are informative, and even if you skip some of the more technical explanations, the book is well worth it. Especially interesting for those wanting to take an ancestry test themselves, or who got one for Christmas, is the “Summary of Common Misunderstandings” that appears at the end of the book. Given the book’s length and the fact that it touches upon many related topics, such as forensic DNA testing, the philosophy of race, and the commercialization of bodily materials, it would make a good background read for a bioethics course. Some readers might not like the repetitions or the mixture of philosophy, ethics, and technical details in some chapters, but it worked for me. I was quite charmed by this little book and highly recommend it to everyone interested in DNA ancestry.

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