

Genetic Justice: DNA Data Banks, Criminal Investigations, and Civil Liberties

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The specialist, however, in reading a book that aims at “covering everything” about fishes, cannot avoid detecting that the presentation of certain concepts could be misleading. The evolution and the classification of fishes (addressed in chapter 1) are topics that strike me as especially daring. The problem with questions such as *What is a fish?* and *How are fishes classified?* is that the overlapping use of the concepts of *fishes* and *classification* seems a contradiction. Once Weis acknowledges that classifications are phylogeny-based, an explanation for the omission of the group *fishes* in the classification of fishes presented might be appropriate. A group in a phylogeny-based (cladistic) classification is required to include all the descendants from the most recent common ancestor (in this case, the ancestor of all vertebrates). Therefore, if the group *fishes* is accepted, it would include tetrapods. We are fish in the same way that birds are dinosaurs. (Systematists eventually got rid of the name *fishes* and kept the more neutral one, *Vertebrata*.) I am not against using the group *fishes* in an ecological context. I wonder, however, if Weis is not underestimating the ability of her readers to understand their own tree of life.

In addition, the mention of interesting research studies makes the process of science more real to the reader, but Weis sometimes fails to include scientists' names. I assume she also opted, for the sake of maintaining a nonacademic style, to omit citations and footnotes from the book, which I personally miss. An appendix with supporting literature is added in each chapter; however, it is not always clear which content they refer to.

The book closes with a chapter on research (Why do people study fishes?) and one on conservation (What can we do to protect fishes?), in which Weis summarizes the ethical, aesthetic, and practical reasons for caring about the future of fishes and their ecosystems. Why do we need books for the general reader like *Do Fish Sleep?* I believe scientists play an increasing role in eliciting

public awareness and changes of attitude. Weis's new book is a valuable contribution toward that goal.

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WHERE IS THE BALANCE OF JUSTICE?

Genetic Justice: DNA Data Banks, Criminal Investigations, and Civil Liberties. Sheldon Krinsky and Tania Simoncelli. Columbia University Press, 2010. 448 pp., illus. \$29.95 (ISBN 9780231145206 cloth).

It is obvious from the title that this is not a book on the structure or function of DNA but on its recent use in seeking evidence of criminality. By comparing the short-tandem-repeat sequences of DNA obtained from a crime scene with the DNA of any person who may have been implicated in the purported crime—and who has been required to deposit his or her DNA for database filing—criminal forensics can strongly implicate the person as being present at the crime scene with any banding match. DNA testing in the United States basically involves the separation of bands of DNA from 13 loci of the human genomic DNA. Different countries use a different number of loci to determine a genetic match.

Genetic Justice: DNA Data Banks, Criminal Investigations, and Civil Liberties is composed of 18 chapters in three parts. Part 1 surveys various aspects of forensic DNA collection, analysis, interpretation of the match, and DNA banking. These chapters are replete with historical evidence that clearly reveals how the simple contamination of “isolated” DNA samples by forensic technicians using swabs at the crime

scene can result in false and misleading evidence. The book also questions whether it is judicious or even legal to collect—sometimes under intimidation—and store DNA from juveniles (or people who were arrested for minor offenses but never convicted of a crime), thus empowering law enforcement and its surveillance machinery. Authors Sheldon Krinsky and Tania Simoncelli provide thought-provoking examples of the protection rights of citizens at risk because of their societal status or lifestyle. They disclose that some law enforcement personnel exhibit an utter disregard for civil liberties by conducting “DNA dragnets,” in which the DNA is collected from a large number of people reputedly having a pattern of clashes with the law in an attempt to solve crimes with no distinct leads. The quality of the process of DNA analysis is also questioned, and poor work habits and a lack of technical skills, quality control, and accuracy in the interpretation of DNA data are noted.

An important and contentious issue described in chapter 4 involves the familial searching of databases. Familial searching has indeed resulted in many instances in which DNA profiles of family members that were in a database led to the exact match of a relative who proved to be the actual perpetrator of a crime but whose DNA profile was not in the database. In these cases, near matches led to complete matches.

To illustrate the favorable aspects of using DNA within the criminal justice system, the authors offer examples of many once-unsolved murder cases that occurred before the advent of the DNA test, wherein the culprits were caught 20 or 30 years after the crime by a DNA match. Court cases are also cited, however, in which DNA was obtained surreptitiously from suspects, which raises questions about the legality of obtaining such samples for the sake of solving murder or rape cases. These anecdotes and reports are insightful in that they cause us to

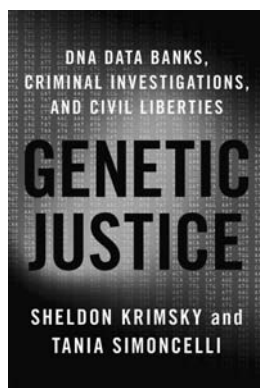
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question to what extent law enforcement officers and crime scene investigators have the right to use whatever methods they can to collect DNA samples. How do these rights weigh in the balance of justice when compared with the rights of crime suspects, who most likely would not willingly allow their DNA to be used under any circumstances?

Citing the work of the venerable Innocence Project, *Genetic Justice* presents interesting examples of cases in which DNA testing exonerated wrongly convicted people, but the book also notes the limits of such exoneration attempts and, in so doing, spotlights the vulnerability of our criminal justice system. According to the Innocence Project, 22 percent of their appealed cases between 2004 and 2008 were terminated prematurely because the DNA evidence from the crime scene was no longer available. Many states have no statutes requiring the preservation of evidential DNA from various offenses after the completion of initial court procedures. Also included are instances of DNA being inadequately stored for long-term preservation, leaving its exculpatory potential thus eroded.

Should we have a universal DNA database, or at least DNA profiles from people arrested even for minor offenses in order to enrich the genetic pool for more effective testing? Certainly, many states in the United States now have laws that allow DNA collection upon arrest, not necessarily upon conviction. Should this forensic DNA collection be expanded to all those living in (or visiting) the United States? Should their DNA be automatically included in the Combined DNA Index System database? Although the book argues both sides of this proposal, it does point out the following: Many acts of crime do not necessarily leave a sample of DNA behind; DNA profiles may be racially biased to include more minorities; and since death penalties have not led to reduced crime rates, it is also not likely that constructing these all-encompassing DNA databases will deter criminals. The US Constitution's

Fourth Amendment, which describes the right against unreasonable search and seizure, has also been invoked in cases involving people who are unwilling or fearful to have their DNA in a database, universal or not. Indeed, a universal database, aside from creating biobanks of human tissue, portends other implications besides DNA profiling for criminal activity, including determining a predisposition to genetic diseases, one's heritage, phenotypic characteristics, and the most questionable of all, the propensity to commit acts of aggression and violence.



Part 2 surveys the current status of forensic DNA data banking, including aspects of eugenics, in five nations: the United Kingdom, Japan, Australia, Germany, and Italy. The United Kingdom has the world's largest DNA database (the UK National DNA Database) and has fewer homicide cases (1.5 for every 100,000 people) than the United States (5.7 for every 100,000 people). In the United Kingdom, DNA can be collected from anyone who has been arrested, with or without conviction, and stored indefinitely. Familial searches are common but controversial. Japan's DNA database is much smaller than that of the United Kingdom. The book cites a shocking example of a person in Japan who was wrongly convicted of the rape and murder of a little girl because of faulty DNA testing and who was released after spending 17 years in prison. The nature of DNA database operations, the limits to

police power, and the concerns of privacy and civil liberties are briefly discussed with regard to other countries, such as Australia, Germany, and Italy. Regarding the United States, however, issues of privacy, personal rights, the Fourth Amendment—as well as the racial disparities in forensic DNA data banking and throughout the criminal justice system—are thoroughly and extensively debated.

Part 3 focuses on the fallibility of DNA testing. DNA testing is faulty not because the principle of DNA profiling is faulty but because human error affects the handling, labeling, and interpretation of DNA samples. An ample number of court cases are cited in the book to raise concerns about the judicial decisions made solely on the basis of DNA profile matching. In all, the authors appear to dictate a cautionary approach to DNA testing in order not to allow an innocent person to fall victim to a prejudicial or imperfect procedure—and such a procedure can include faulty DNA testing. The concept of *universal justice* is the presumption of innocence until a judgment of guilt is produced. According to *Genetic Justice*, current DNA testing is not error free or robust enough to meet this high standard and needs continued refinement. It is also the recommendation of this book that strict guidelines be followed with regard to how and from whom DNA samples should be collected. To be determined is what role the judiciary should play in this process.

Thoroughly researched and well referenced, *Genetic Justice* distinguishes itself as an interesting and informative book on the history of the development of DNA testing, forensic DNA databanks, and the justice system's evolving approaches to identifying and prosecuting criminals (and to rescuing the wrongly convicted). By not addressing other contentious issues, such as the patenting of human genes or gene mutations, that are more applicable to the fields of medicine and public health, this book is more highly recommended for those

with a special interest in the potential of DNA testing in our criminal justice system.

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Avian Architecture: How Birds Design, Engineer, and Build. Peter Goodfellow. Princeton University Press, 2011. 160 pp., illus. \$27.95 (ISBN 9780691148496 cloth).

Basic Confocal Microscopy. Robert L. Price and W. Gray Jerome, eds. Springer, 2011. 302 pp., illus. \$189.00 (ISBN 9780387781747 cloth).

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Handbook of Molecular Microbial Ecology I: Metagenomics and Complementary Approaches. Frans J. de Bruijn. Wiley, 2011. 784 pp., illus. \$299.95 (ISBN 9780470644799 cloth).

Handbook of Molecular Microbial Ecology II: Metagenomics in Different Habitats. Frans J. de Bruijn. Wiley, 2011. 640 pp., illus. \$299.95 (ISBN 9780470647196 cloth).

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The Theory of Ecology. Samuel M. Scheiner and Michael R. Willig, eds. University of Chicago Press, 2011. 416 pp., illus. \$40.00 (ISBN 9780226736860 paper).

Who's In Charge: Free Will and the Science of the Brain. Michael S. Gazzaniga. Harper Collins, 2011. 272 pp., illus. \$27.99 (ISBN 9780061906107 cloth).

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