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BOOK REVIEW

David Foran,[1] Ph.D.

Review of: *An Introduction to Forensic DNA Analysis, Second Edition*

REFERENCE: Rudin N, Inman K. An introduction to forensic DNA analysis, 2nd ed. CRC Press, Boca Raton, Florida, 2002. Cost $74.95

An Introduction to Forensic DNA Analysis by Rudin and Inman is an update of the 1997 first edition of the same name by Inman and Rudin. Many methods used by forensic scientists endure for decades without undergoing substantial change, so it is rare indeed when a field is transformed so quickly that a thorough text update is needed after only a few years. Books on forensic molecular biology could be updated quarterly.

The second edition, like the first, is designed "so that the layperson can gain insight into how the process works. . . .". Interested laypeople might include those tangentially involved in forensics, such as lawyers or police officials, or non-science students interested in this exciting and ever-evolving field. It is not written at a detailed or rigorous enough level for upper undergraduate or graduate students in a forensic track, nor for laboratory scientists. Those individuals should seek out John Butler's book on STR analysis, as well as numerous excellent reviews on specialized DNA topics in the forensic literature.

An Introduction to Forensic DNA Analysis is written for people who are interested in forensic DNA but have perhaps not had a biology class in quite some time. There are two primary requirements for successfully introducing a topic as complicated as DNA typing to laypeople: keep the subject matter interesting enough so the reader doesn't doze off, and keep it simple and clear enough so the reader is not befuddled. This book largely meets the first requirement, and often falls short of the second.

To help me in this critique of the second edition, I asked some people outside forensics for their impressions after having read a few pages (not a rigorous scientific test I admit, but this is a book review). Each found the book easy to read, and more importantly, found the brief case studies presented in the sidebars interesting and entertaining. These sidebars, which existed in the first edition, detail instances where different forensic DNA methods have been used in casework, and help make some of the unavoidable dryness of A, G, C, and T a bit more palatable. A few new sidebars have been added to the second edition, though it would be nice to see some of the more outdated ones (such as MVR analysis) replaced with newer and more relevant material.

The major change in this edition is the inclusion of STR typing and other state-of-the-art forensic DNA methods. Unfortunately, the authors failed to rid the book of its copious material on RFLPs and DQα/Polymarker, and the layperson at which the book is targeted can only be left with the impression that these methods are still used in most forensic laboratories today. In the historical section covering the DNA wars and court admissibility of DNA evidence (Chapter 11), RFLP discussion makes sense. Including it in virtually every other chapter does not. This glut of RFLP/DQα/Polymarker detail stems from the way the authors updated most of the book. STR analysis, as well as mitochondrial DNA and other current typings, tend to be simply pasted on at the end of any given section. Chapter 7, Interpretation of DNA Typing Results, serves as an example. Pages 97–123 exhaustively cover RFLP/DQα. In the same chapter, today's most important technique, STR analysis, is presented in 2–3 pages, these showing 3 loci and silver staining methods that are themselves obsolete. Mitochondrial DNA gets the next 3 pages, and the entire Y-chromosome is touched upon only in a sidebar. Yes, interpretation of one data type can be extrapolated to others, but is there a reason to place such a heavy emphasis on methods that are no longer in use?

Both editions of the book suffer from a fair amount of repetition. Throughout, the reader encounters phrases such as "As described previously . . ." (p. 71) and "We have mentioned . . ." (p. 78) that remind us that we have read this already. I am not sure of the need for Chapter 6, Procedures for Forensic DNA Analysis, after just having read Chapter 5, An Overview of Forensic DNA Typing Systems. These could easily be combined into a single chapter, eliminating much of the repeated material. This would require a major editorial effort, however. Where the authors made this effort, such as Chapter 9 on The DNA Databank (previously called DNA and the Database), it paid off well. Where the effort was not made, the book suffers.

Given the target audience, the non-scientist, *An Introduction to*

[1]School of Criminal Justice, 506 Baker Hall, Michigan State University, East Lansing, MI.

Forensic DNA Analysis should be much more vigilantly written. I was disappointed to see that the sequencing gel, which made its initial appearance on p. 76 of the first edition, is still running backwards on p. 82 five years later. A person who runs gels every day sees this as a simple mistake. A novice assumes it's correct. A small sampling of other problems likely to confuse a reader include: The strangely proportioned mitochondrial DNA map in Chapter 5; Taq polymerase in contact with the DNA strands during the denaturation and annealing phases of PCR, but not during extension (Plate 5); Appendix K that sums "Total STR (legal) Decisions" for both "STR Decisions" and "mtDNA Decisions"; Appendix A, the Glossary, which omits important terms such as amplicon, dNTP, microsatellite, minisatellite (although it is used to define MVR), and Control Region (although it is used to define HVI and II); And of course, the misuse of the word "data," when the verb calls for "datum," throughout.

To summarize, in an increasingly complex legal system, the second edition of *An Introduction to Forensic DNA Analysis* is geared towards an important audience—those needing basic information on forensic DNA typing. The authors do a good job of keeping a reader's interest, an essential factor in this highly technical field. Mistakes are far too common, however (which is generally considered unacceptable in our work), and the authors would have been well-advised to conduct a thorough rewrite of the book. Those chapters that were rewritten are noticeably improved, while those that were simply updated through inclusion of a few extra paragraphs on STRs and mtDNA leave the reader with an inaccurate and uninformed view of the field today.