

BOOK REVIEW

David J. Balding,¹ *D.Phil.*

Review of: *Forensic DNA Evidence Interpretation*

REFERENCE: Buckleton J, Triggs CM, Walsh SJ, editors. *Forensic DNA evidence interpretation*, CRC Press, Boca Raton FL, 2005, ISBN 0849330173 552 pp, \$US 130.

The technology underlying forensic DNA profiling has progressed rapidly over the past decade, providing new challenges for interpretation at a time when understanding of the basic principles has also been evolving. These developments have been at too fast a pace for book publishers to keep up. In recent years forensic scientists have been served by Evett and Weir (1), which is short and introductory, providing less coverage of advanced issues and recent developments, and the US National Research Council (2) report, which contains errors and misguided recommendations, particularly with respect to database searches. Now DNA forensic scientists have available an extensive, thorough, and authoritative reference work, focussing on interpretation issues but with much background information on the underlying biology and technology.

Buckleton is an author of every chapter, which provides a consistency that edited volumes can lack. He is sole author of three chapters, while in the remaining nine his co-authors include the two co-editors as well as Peter Gill, James Curran, Timothy Clayton, and SallyAnn Harbison. Together these authors provide an extensive resource of experience, and a range of perspectives including those of academic teaching and research, and the training of forensic scientists, but the book's principal target audience is forensic science practitioners. The authors are based in New Zealand, England, and Australia, but most are widely travelled and in particular have a close familiarity with US practices, which are also covered.

Some of the specialist topics include an extensive treatment of mixtures (58 pages), low copy number (LCN) typing, non-autosomal markers, relatedness testing and the effects of possible relatedness on identification, and the identification of missing persons and disaster victims. On each topic the authors cover the basic science, describe relevant aspects of the technology, and discuss and develop statistical and population genetics issues. They also discuss many related aspects of evidence interpretation at the crime scene, in the laboratory, and in the courtroom. I particularly enjoyed

the occasional discussions of well-known cases or applications, including the role of DNA evidence in the O.J. Simpson case, the identification of the remains of some members of the Russian royal family, and the victims of the Waco siege incident.

With almost 900 references, the authors are thorough in drawing on forensic-related scientific literature both to support their developments and to give alternative points of view. Nevertheless, they often encounter interpretation issues that are not adequately dealt with elsewhere and they have had to develop their own, at least preliminary, approach. This applies, for example, to population-genetic corrections for haploid and X chromosome markers, and statistical analysis of the results of LCN analysis.

This book does not provide an accessible tutorial for beginners, although there is a glossary to assist those that are less advanced. In particular, some statistical or mathematical maturity is needed to absorb the more advanced developments. Statistical and population-genetics aspects of evidence interpretation are not without controversy. I am sympathetic with the authors' advocacy of a Bayesian perspective to evidence interpretation, at least as a guide to the forensic scientist's thinking, even if not explicit in the courtroom. I don't agree with every one of the authors' opinions, but overall I feel that they do a good job of airing controversies and giving space to opinions that differ from their own.

To my knowledge there is currently nothing available to match the scope and authority of this book, and given the importance of the topic it is a must for all forensic scientists working with DNA evidence. Those in related professions such as lawyers and judges will probably find it hard going, but rewarding. Trainees will need to look elsewhere for a first introduction, but will eventually need to refer to this for advanced topics and for pointers to the primary literature.

References

1. Evett, Weir B. *Interpreting DNA evidence*. Sinauer, Sunderland MA. 1998.
2. National Research Council. *The evaluation of forensic DNA evidence*. National Academy Press, Washington DC. 1996.

¹Department of Epidemiology and Public Health, Imperial College, St. Mary's Campus Norfolk Place, London W2 1PG.