BOOK REVIEW

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Review of Forensic DNA Profiling Protocols

REFERENCE: Lincoln P, Thomson J. Forensic DNA Profiling Protocols. Humana Press, Totowa, NJ 1998; 309 pp.

This hard covered volume is one of the series (#98) of *Methods in Molecular Biology* and is directed to forensic scientists who need to apply practical methods of DNA analysis for the purpose of identifying either the origin of evidence samples or individuals. Mainstream chemical, interpretive and statistical methods are included.

There are 25 brief chapters (except for #13 which is a lengthy 34 pages) and an index of eight pages. Chapters are written by respected contributors from the public and private sectors of the U.S., U.K., Germany, Japan, Switzerland, Spain, Denmark and Finland. (For some reason, the list of contributors to the chapters is incomplete.) There is no explicit division of the book into sections, but there is a fairly logical flow to the subjects covered. Several chapters about capillary electrophoresis might have been placed closer together.

Chapters deal with DNA recovery, analytical chemistry, probabilities of matched typing results, development and implementation of specific procedures for genomic and mitochondrial DNA typing. Additional chapters describe sex determination and the identification of species as well as individual people.

Generally, each chapter begins with an introductory commentary that explains the purpose of the subsequent protocol. There is a list of materials and working reagents, procedural description, alternative procedures (for various case-related circumstances or analytical conditions) and a section of notes with suggestions for avoiding pitfalls or improving outcomes. Finally, there is a list of references that provides specific attributions as well as general or classic papers on the chapter's subject matter. There is redundancy of the references from chapter to chapter. Oddly, there are no references in one chapter (#7).

The benefit of experience and expertise of the authors are evident in the details comparing alternative protocols, particularly in the Introductions, Methods and Notes sections of each chapter. A few ancillary methods are included (e.g., amylase determinations for demonstrating presence of saliva), but most traditional serology is omitted. Remarks that allude to experimental methods at the time of writing are further evidence of authors' awareness of progress in the field. A delay between the writing and publication appears to have significance, however, because some methods are now in widespread use (e.g., FTA paper extraction of DNA). The field of DNA forensics is fast-moving.

When present, figures are relevant, simple and helpful, but some chapters would have been enlivened by more figures and photographs. Inexperienced readers might have benefited from photos of slot blots or a colored print of fluorescent dyes bound to DNA restriction fragment alleles. That some readers were expected to need assistance with molecular biology and its language is evident from most chapter introductions, and from statements such as ". . .many forensic scientists have little or no background in basic molecular biology." (p. 49) Some authors probably anticipated a more experienced readership, however, since they provide a great deal of technical detail. Yet, there is a repetition of fundamental information. Thus, there is an expected unevenness of style that is found in most multi-authored works. Perhaps more explicit instruction to the authors could have improved communication of the relevance of the material covered. In chapter 10, for example, there is virtually no explanation of the molecular biology that might have served as background. The description of how sequencing is carried out is insufficient to understand it. Author instruction might have improved cohesion too. In fairness, I don't suppose most readers will use the material as a textbook, and the editors clearly stated their book's purpose as serving analytical assistance.

It is not possible to evaluate the accuracy of the protocols without trying them. On the other hand, there are few language errors, indicating disciplined editing. Occasional language or typographical errors are found, however: "*a*ffect" (p. 9, line 9), "sam*p*le" (p. 39, line 13), "matrilinea*l*ly" (p. 251, line 17), etc. Is mitochondrial DNA really inherited in a "haploid" pattern? Chapter 11 misstates that multilocus DNA probes are ". . . the most accurate method available for paternity testing. . .". The method is hardly used and does not meet current Standards of the American Association of Blood Banks. In fact, there isn't even mention of the widely used single locus probe methods in parentage or kinship studies. In many chapters, there is perpetuation of the inaccurate term "genotyping" when identification of VNTR or STR alleles by their sizes alone is *pheno*typing.

Some chapters are lucid and notable for their brevity and accuracy. An example is the overview of PCR-based systems. Another is one about statistical methods for single locus probes which makes use of simple English, algebra and frequency tables.

Despite a few shortcomings (and my quibbling), this reference source should be in the libraries of forensicists and on the shelves of laboratories engaged in DNA allotyping.

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