

Book review

Forensic DNA Typing: Biology and Technology behind STR Markers

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There can be few areas of endeavour in molecular genetics that have captured the imagination and interest of the public as much as DNA profiling. DNA profiling is renowned as a technique that is used in forensic investigations to match criminals against samples obtained from crime scenes, to identify individuals from their remains and to determine paternity. It is also an excellent example of a new technology based on sound scientific principles and on the successful application of those principles to a commercial field. The author of this textbook brings his experience in forensic science and genetics to the reader to provide a timely and authoritative review of the biology and technology of current DNA profiling techniques.

The text is organised into two broad sections that review the molecular biology and the instrumentation used in current DNA profiling strategies. In the first section the author reviews the molecular biology of short tandem repeat (STR) sequences, mitochondrial DNA and the markers used for gender identification. In addition, he covers those processes involved in the isolation of samples of DNA for amplification via the polymerase chain reaction and explains the interpretation of the

results obtained. The second part of the book examines the current technology used in DNA profiling, which includes the use of fluorescent dyes to label amplified DNA sequences and their separation and analysis by means of slab gel and capillary electrophoresis. Of particular note, there are two chapters that cover in some detail the two main instruments currently used; the ABI prism 310 genetic analyser and the Hitachi FMBIO II fluorescence imaging system. These may well be of most interest to biologists, since they may be familiar with the genetic aspects of DNA profiling, but not with the current technological platforms. The section is rounded off with an examination of the use of computer DNA databases applied to DNA profiling approaches. Looking ahead, the author considers technologies that have potential for future profiling strategies, such as mass spectrometry and the use of microarrays.

Usefully, at the end of the book, the author provides case study examples of DNA testing in high profile forensic cases and a set of extremely informative appendices that provide technical details for those readers who might want to integrate this technology into their laboratories. This reviewer knows of no other current text on DNA profiling that is as informative, well-written or as all-embracing as this, and thoroughly recommends it as an essential addition to reading lists for forensic and genetic degree programmes and for workers, both new and established, in these fields.

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