

## Book reviews

**Molecular Approaches to Ecology and Evolution.** R. DeSalle and B. Schierwater (eds). Birkhäuser Verlag AG, Basel. 1998. Pp. 364. Price DM 88.00, paperback. ISBN 3 7643 5725 8.

This collection of 17 wide-ranging articles shows the remarkable applicability of molecular approaches to many aspects of ecology and evolution. The articles are all in the format of reviews and grouped into three sections: part 1 on population biology, kinship and fingerprinting, part 2 on species and part 3 on higher taxa and systematics. Within part 1, the advantages and pitfalls of microsatellite analysis are well-covered with two reviews (Schlötterer and Pemberton; Rosenbaum and Deinard) while Caetano-Anollés describes an extraordinary array of approaches to reveal alternative polymorphic markers using arbitrary oligonucleotide primers (RAPDs and the sons and daughters of RAPDs). From a more conceptual angle, the three remaining articles in part 1 describe how a variety of different molecular techniques have helped in studies of kinship and reproductive success in insects and birds (Webster and Westneat; Siva-Jothy and Hadrys; Scott and Williams).

Part 2 opens with two articles on the use of molecular data to distinguish between different speciation models (Templeton; Wakeley and Hey), and then Amato *et al.* and Vogler show how molecular markers can aid in decision-making in conservation biology. The model bacterial species comparison between *Escherichia coli* and *Salmonella enterica* (serovar Typhimurium) is discussed in molecular terms by Ochman and Groisman, while Routman and Cheverud emphasize the value of quantitative trait loci in speciation studies. Part 3 has three articles relating to molecular data analysis (Wheeler; Golstein and Specht; Larson) the last of which considers the vexed question of how to combine molecular and morphological data sets. Of the final two chapters, I particularly enjoyed that by Cunningham and Collins who review what is known about the faunal interchanges between the Pacific and the Atlantic, and the value of molecular markers in analysing these. In contrast, the developmental genetics considered by Jacobs *et al.* stands out rather uncomfortably as covering distinctly different material from the rest of the book.

The articles are well-written and well-referenced (up-to-date until 1997) and I found that reading the book from cover to cover gave an interesting perspective of the field. The book is not intended to be comprehensive (there are some huge gaps, e.g. molecular clocks, comparative genomics, ancient DNA) and cannot be used as a core text for teaching molecular ecology and evolution, but will be genuinely useful for supplementary reading. The editing is light which leads to some repetition among articles and some inconsistency in the use of acronyms. While on the subject of acronyms, this book really illustrates the extent to which this field is swamped with them. Whatever Rosenbaum and Deinard's concerns, let us

have 'microsatellites' instead of 'SSRs' and 'STRs', and let 'ASAP' stand for 'as soon as possible' rather than 'arbitrary signatures from amplification profiles'!

It should be noted that this book has a more substantial 1994 predecessor [*Molecular Ecology and Evolution: Approaches and Applications* (B. Schierwater *et al.*, eds) pp 622]. All but two of the articles in the new book are by authors who wrote articles in the previous one. Most of the authors have produced a radical revision of their previous work or a completely new piece, but five of the articles in the new book are very similar (albeit updated) versions of articles in the old one. So, if you have the old volume, think twice before buying this book. If you don't have the old volume, I would recommend DeSalle and Schierwater's book as an enjoyable sampler of the field of molecular ecology and evolution.

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**Interpreting DNA Evidence: Statistical Genetics for Forensic Scientists.** Ian W. Evett and Bruce S. Weir. Sinaur Associates Inc, Sunderland, Massachusetts. 1998. Pp. 278. Price £25.95, paperback. ISBN 0 87893 155 4.

This book sets out to provide the statistical and genetical knowledge that forensic scientists require to report and testify about DNA profiling evidence. In doing so it tells a story of much broader interest. DNA evidence can be both very strong and quantifiable, yet these apparently useful properties have exposed and challenged the way in which scientific evidence is presented and decisions are made in court. How can a court weigh the impressive odds given to explain the strength of the DNA evidence with the more conventional evidence?

Evett and Weir illustrate the issue using the case of *R vs. G. Adams*. In outline, the case involved a rape by a stranger. A suspect was identified by a DNA profile match with a sample obtained in connection with another incident. This suspect, Adams, had an alibi for the night of the attack. He was not picked out in an identity parade by the victim, indeed she said at a later hearing that he did not look like her attacker and that he was appreciably older. The presentation of the evidence was understandably problematic involving retrial and appeals. How could the jury compare the unquantified evidence suggesting innocence with the odds calculated from the DNA evidence suggesting guilt? At retrial prosecution and defense experts cooperated in a remarkable innovation. They guided the jury in the calculations needed to express the