

The best part comprises the five tutorials and this is a convenient place to start because it interacts with several of the other parts. 'Foundations of Evolution' deals with molecular and Mendelian genetics in three sections (building blocks of life, essentials of genetics, laws of heredity) each comprising several screens of text, pictures and diagrams. 'Evolutionary Genetics' has seven sections including one on random events which I worked through. It is divided into 5 sections with about 20 screens of information which includes an animation of the founder effect. This has rare red and common yellow dots (= butterflies) on a green island on which a storm is going to (non-selectively) destroy most of the insects, and lead to an increase in frequency of red butterflies. In due course the sea darkens (the storm?) but what happens is that a small number of dots migrate across the seas to some adjacent land. The original population becomes all yellow, while the migrant population ends up with equal proportions of the two types! You can also run an experiment to examine the effect of drift in populations ranging in size from 10 to 99. The tutorial finishes with a summary and 5 questions. There are other good tutorials on 'Adaptation & Selection', 'Evolution & Diversity' and 'Palaeobiology', although in the latter the section on rates of evolution has the wrong summary. All the tutorials include pictures from the image gallery and material from the video gallery.

The A-Z browser is good too, and allowed me to explore the meaning of over 200 terms, via words, and sometimes pictures/diagrams or animations. These range from adaptation, through Cope's rule and pleiotropy to variance and Zahavi's handicap. For 'adaptation' there is a picture of *Geospiza* some 150 words of explanation and links in the text to other terms such as natural selection, constraints, drift and evolution of the eye, which in turn has an animation describing the results of Nilsson and Pelger's computer model on this subject. There is a link to the video gallery with Maynard Smith on 'What is an adaptation?' and at the end there are further links to 'Recognising adaptation' and 'How we find out if selection is at work'. Other entries were much shorter and less complex, 'locus' had 30 words and 'mitosis' 55, while some entries have no pictures.

Video gallery features brief explanations or comments on topical points by twelve leading evolutionary biologists such as Maynard Smith, Dawkins, and Hamilton. For each of them there is a choice of between 2 and 7 topics and, once chosen, we hear and see them deliver the information which is also displayed as text. So, for example, you can have around 70 words by Simon Conway Morris on why stasis occurs or Linda Partridge on what is non-coding DNA. The image gallery is a collection of around 120 still photographs ranging from *Agrostis tenuis* to zebras, each accompanied by up to 50 words of text but I found many of these disappointing. Sometimes the quality of the picture is poor; for example, it is impossible to make out the grey squirrel or see what is going on with the '*Formica* ant defending'. *Escherichia coli* is a mass of blue specks

which could be anything and the frontal view of a manatee is not informative. Marine iguanas appear not to exist. Often the text is not that informative either; the damselfly and damselflies mating have the same text, while all we learn about the pigeon is that it is a cosmopolitan species. The comment that 'reptiles such as this (my emphasis) dominated land during the Permian' which accompanies the short-horned lizard is misleading.

Timeline takes one through the history of life on Earth in pictures and words in a series of about 40 stages. At the bottom the four eras are displayed and, on choosing one, the relevant subset of geological periods appears on the left. In the centre there is a relevant picture and on the right a commentary in text that can be scrolled through. Classic texts contains 20 classic papers including the 'Spandrels of San Marco' and 2 chapters from each of the *Origin of Species* and the *Genetical Theory of Natural Selection*; compared to the rest of the material I thought that these were very advanced. There are 6 virtual experiments, i.e. computer simulations of evolutionary phenomena. You can, for example, observe the effect of selection for oil content in maize, and simulate selection against a recessive. Although easy to use I found these rather elementary compared to other simulation packages available. The range of input values is limited, the graphical displays are rather small and the results of one simulation cannot be retained or printed for comparison with others.

In conclusion some of this CD is very good and it could be used to support courses at a first or second year undergraduate level although it is expensive and, unlike the book, there is not much to engage or challenge a third year student. Other parts do not really earn their keep and my sample of the material revealed quite a few errors and problems which need to be ironed out.

DAVID J. HEATH
 Department of Biological and Chemical Sciences
 University of Essex
 Wivenhoe Park
 Colchester CO4 3SQ
 U.K.

Antibody Engineering — A Practical Approach. John McCafferty, Hennie Hoogenboom and Dave Chiswell (eds). IRL Press (Oxford University Press), Oxford. 1996. Pp. 325. Price £27.50, paperback. ISBN 0 19 963592 7.

'Everything you wanted to know about antibody engineering but were too afraid to ask'. This aptly describes a comprehensive book which has assembled in one volume the protocols required by the researcher to generate and engineer novel antibodies or fragments. The text contains an extensive number of tried and tested protocols by leaders in the field, covering all aspects of antibody engineering; including construction/manipulation of antibody gene repertoires in bacteriophage and in transgenic mice, measurement of antibody affinity, analysis of antibody sequences, 'humanising' antibodies by CDR grafting,

manipulation of antibody effector functions and production of antibodies and fragments in both eukaryotic and prokaryotic systems.

The book assumes that the reader has a good background knowledge of recombinant DNA techniques and to some extent antibody engineering itself. A better balance could have been obtained by including a general first chapter introducing in more depth the concepts and theories behind the practical protocols including advice relevant throughout the book. For example, 'Recommendations on the Preparation and Use of a PCR Room' does not appear until Chapter 7, whereas the technique itself is mentioned in earlier chapters. A glossary of terminology is also missing, a valuable source of information for a novice in this particular field. Practical approach guides can prove to be a valuable source of 'base' protocols even for the most experienced researcher in the field. This text is well structured with short introductions to the chapters and to each protocol. The methods themselves are easy to follow, well detailed, step by step guides.

Antibody Engineering — A Practical Approach brings together a number of authors under the editorial control of McCafferty, Hoogenboom and Chiswell. The result is a comprehensive guide that will act as a valuable practical reference source for any researcher entering the field of antibody engineering.

STEVE HOLMES
SmithKline Beecham
NFSP-N
Coldharbour Road
Harlow
Essex CM19 5AD
U.K.

Chromosomes Today, vol. 12. N. Henriques-Gil, J. S. Parker and M. J. Puertas (eds). Chapman and Hall, London. 1997. Pp. 379. Price £60, hardback. ISBN 0 412 75240 9.

The volumes of *Chromosomes Today* represent the proceedings of the International Chromosome Conference (ICC), a meeting that takes place every three years. The meeting consists of poster sessions and about three solid days of plenary lectures reviewing recent developments in cytogenetics. I have found the meetings an excellent way to keep up with research on chromosomes, and *Chromosomes Today* a valuable reference book thereafter.

Chromosomes Today, 12 includes papers based on all the plenaries at the 1995 ICC in Madrid (the poster abstracts are published in the 1995 *Chromosome Research*, 3 supplement 1). It stands out relative to its predecessors with regard to quality of production; presumably 'camera ready' days are gone forever! There are many superb colour photographs of chromosomes and even black-and-white portraits of the plenary lecturers.

Although 'International', the Chromosome Conference has always been substantially a European affair, and, as can be seen from the list of authors to *Chromosomes*

Today, 12, there was a particularly strong Iberian representation among the plenaries at the 12th ICC. While I would have preferred more input from North American and Australasian cytogeneticists, I do believe that *Chromosomes Today, 12* is successful as a remarkably wide-ranging survey of the current state of research on chromosomes, with 22 chapters each averaging 17 pages in length. There are up-to-date contributions on many of the long-term favourite issues in cytogenetics: involvement of chromosomal change in cancer, identity or otherwise of chiasmata and cross-over events, selfishness v. neutrality of B chromosomes, orientation of univalents and sister-chromatid cohesion at meiosis, and cell cycle control from a chromosomal perspective. Other more 'modern' issues (Y-linked genes in mammals, DNA methylation, genomic imprinting) are also covered and throughout the volume we are feasted with the greatest excitement of current cytogenetics: the incredible technical developments (FISH, GISH, chromosome painting etc.) applied within a wide variety of studies.

I particularly enjoyed the review papers on use of nucleases in elucidating chromosome structure (Gosálvez *et al.*), the characteristics of chromosome regions that form G-, R- and T-bands (Craig & Bickmore), chromosome behaviour at earliest meiotic prophase (Scherthan) and the power of molecular techniques in understanding plant evolutionary biology (Leitch *et al.*). Also worthy of special mention are Peter Cook's minimalist model of chromosome packing, Harald Biessmann's fascinating story of *Drosophila* telomeres and Milton Gallardo's controversial contention that there is a tetraploid species of mammal.

All-in-all, this volume continues the excellent tradition of *Chromosomes Today* and is well worth reading. Unfortunately, at a cost of £60 it seems destined for library shelves rather than individual collections. Although the book is generally well put-together there are a few minor irritations with respect to editorial control, that I hope will be corrected for volume 13: all contributions should have had summaries, more consistency in chapter length and quality of English would have been desirable, and the colour plates and their legends could have been better positioned.

JEREMY B. SEARLE
Department of Biology
University of York
PO Box 373
York YO1 5YW
U.K.

Biological Invasions. Mark Williamson. Chapman and Hall, London. 1996. Pp. 244. Price £24.99, paperback. ISBN 0 412 59190 1.

Biological invasions are fascinating phenomena, and I can think of no-one better qualified than Mark Williamson to write about them. His interest in the subject developed