

Book review

Understanding DNA: the molecule and how it works. C. R. Calladine and Horace R. Drew. Academic Press (Harcourt Brace Jovanovich), London. 1992. Pp. 220. Price £32.50, hardback. ISBN 0 12 155085 0

Understanding DNA is a book which aims to explain simply what DNA is and how its properties are dictated by its chemical constituents and the rules which govern molecular interactions. The book begins with an introduction to molecular biology for the non-expert and then spends two chapters talking about the helical nature of DNA. This is followed by chapters on twisting and curving in DNA, firstly in two dimensions and then in three, and a chapter on DNA supercoiling. The final two chapters discuss the assembly of DNA into chromosomes and methods used to analyse the structure and properties of DNA. The book concludes with two appendices, one of which is a short glossary and the other a short discussion on base-stacking and hydrophobic forces.

One of the key questions in my mind when reading this book was, who is it written for? According to the authors it is written for students of chemistry and biology at university, and 'ordinary people' with no prior knowledge who want to understand the fundamental processes of life. I felt that it would be inappropriate for either group. University students will find it frustrating because the treatment is rather selective and not at all comprehensive, and they may find the writing somewhat condescending. Ordinary people will find much of it tough going (for example, the use of differential geometry and Fourier transform) and it does not have the type of 'coffee-table' illustrations that you can leave around to impress your friends. In any case, both groups will probably be put off by the price which is steep when compared with the other 1000-plus page comprehensive biochemistry texts available nowadays for considerably less. However, I understand from the publishers that a much cheaper paperback version is also available.

So who will find it useful? One group would be sixth-form (11/12th grade) students who develop a passion for DNA and want to delve further into the area to get a taste of the wider aspects of the subject. This group would probably appreciate the exercises at the end of each chapter which encourage the reader to think about and apply what he/she has learnt. Surprisingly, another group would be experts working in related areas who perhaps have not got to grips with, say, the concepts of twist, slide and roll in DNA base pairs or the differences between toroidal and interwound supercoiling. Here they will find such concepts clearly and gently explained in a manner not normally found in research reviews. However, this latter group may again be put off by the style.

Judged purely on scientific grounds the book has both strengths and weaknesses. Among the strengths are the clar-

ity of the explanations of some quite difficult concepts and the novel way in which certain ideas are treated, perhaps causing the reader to think again about certain aspects of DNA structure. On the negative side the book is rather selective and some topics are given heavy emphasis, reflecting the research interests of the authors. Another criticism is that the book has a tendency to be Cambridge (UK) centred, with examples being drawn frequently from work carried out in various labs at Cambridge, in preference to work carried out elsewhere.

On the whole I enjoyed reading this book and would encourage colleagues working in the general area of DNA research to read it. However, I think the book will have trouble finding a natural audience.

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The Cambridge Encyclopedia of Human Evolution. Steve Jones, Robert Martin and David Pilbeam (Eds). Cambridge University Press. 1992. Pp. 506. Price £60.00, hardback. ISBN 0521 32370 3.

Workers in the field of human evolution must be familiar with, if not actually expert in, topics that range from geology and palaeontology to primate behaviour and genetics. Such is the range of information that any sensible treatment of the subject in book form must be the work of more than one person. No less than 73 people are credited with contributions to this encyclopaedia, if we include the executive editor Sarah Bunney. Their efforts are variously distributed over 69 chapters and subsections in ten parts that deal with patterns of primate evolution, the life of primates, the brain and language, primate social organization, human evolution in a geological context, the primate fossil record, primate genetics and evolution, genetic clues of relatedness, early human behaviour and ecology of human populations past and present. The text ends with a conclusion on the evolutionary future of mankind, followed by three appendices dealing with historical figures, the geological timescale and a world map of sites and is rounded off with a glossary, list of further reading, an index and a list of acknowledgements. The prize for the most ubiquitous contributor must go to Jones, while his co-editor Pilbeam only appears once in the text and once in the introduction.

The book is not what we usually think of as an encyclopaedia, in the sense that the items in it are not dealt with alphabetically. This may be because it is based on the same format